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## TAIL-FEATHERS AND THEIR MAJOR UPPER COVERTS.

BY HUBERT LYMAN CLARK.

RECENTLY when examining the pterylosis of a trogon, I noticed that the middle pair of tail-feathers lacked major coverts. This led me to look at several other alcoholic birds and I found that the number and position of the major upper coverts bore a constant relation to the tail feathers. On consulting the literature of the subject, I was surprised to find that the fact had never been recorded, if it had ever been observed. Indeed it is notable how very commonly the tail has been ignored in general works on birds. For example in Beddard's 'Structure and Classification of Birds,' there are sections on bill, feet, wing, etc. but not a line on the tail and in the well-known 'Dictionary of Birds,' there is no article on either "tail" or "coverts"; the article on "rectrices" does not refer to the coverts and the article on "tectrices" assures us that while the wing coverts are of great importance, "the tail coverts need little further attention!" In Coues' famous 'Key to North American Birds,' there is an excellent section on the tail, with an interesting paragraph on the coverts, but the number and position of the major coverts are not mentioned. Even Nitzsch gives no information in regard to the tail coverts and their relation to the rectrices.

In view of this rather surprising gap in our knowledge, it seemed to me worth while to see what data I could acquire in the small amount of time I could give to the subject. It became clear at

once that little could be learned from skins, at least without seriously damaging them. This is no doubt one of the main reasons why our knowledge is so incomplete. Fortunately the Museum of Comparative Zoölogy has a very large and varied collection of alcoholic birds, which thanks to the kindness of the Director, Mr. Samuel Henshaw, and the Associate Curator of Birds, Mr. Outram Bangs, is freely accessible to me. I have thus been able to examine the tails and major coverts of more than a hundred genera of birds, representing most of the larger and more important orders. The results of this hasty and superficial work are given here and are, I believe, of considerable interest and perhaps of some importance.

The major upper coverts of a bird lie in a single series directly above the rectrices. In the vast majority of birds, they are quite distinct from the other coverts, which rise from the posterior part of the spinal pteryla, and are so definitely circumscribed that their number permits of no discussion. In some birds however, notably the loon and the penguin, it is exceedingly difficult to distinguish any particular series of coverts as "major" and one can simply assume that the series next above the rectrices should receive that title. But in such cases, it is hard to determine where the outer end of this series, on each side, is and there is room for considerable difference of opinion. I have seen no case however where I was unable to satisfy myself as to the number of major coverts. In some birds, notably the woodpeckers, a series of contour feathers on the sides of the pygidium is continuous with the series of major coverts, and in such cases there is again some trouble in definitely limiting the covert series.

The relative position of covert and rectrix shows some diversity. As a rule each covert is inserted at the base of its own rectrix and the line of covert-pits (on a plucked bird) is parallel to the series of rectrix-pits. But sometimes the two series are not parallel, the outer covert-pits being distinctly further from the rectrices at the corners of the pygidium than near the middle. As a rule, the middle pair of tail-feathers is the largest and they are inserted at a higher level than the others; as a result their coverts are pushed to the outer side. Thus covert 1 does not lie above rectrix 1 but between the bases of 1 and 2 or over rectrix 2, and in some cases, where the middle rectrices are particularly stout as in the Pileated

Woodpecker, covert 1 lies between the bases of rectrices 2 and 3. On the other hand in young birds and sometimes in adults, covert 1 is directly over rectrix 1 and each succeeding covert overlies its own rectrix.

The relative size of the different major coverts is also a matter which shows some diversity, though as a rule covert 1 is largest and the size decreases quite uniformly to the outermost member of the series, which is the smallest. Not infrequently however, at least among water-birds, covert 1 is distinctly smaller than 2, and occasionally, as in the bittern, it is very small. Sometimes the third or fourth covert may be the largest, the second and first about equalling the fifth and sixth. The most extreme case is that of the cormorants, where the three outer coverts are large and well-developed with 6 the largest, 5 smaller and 4 still smaller, while the three inner coverts are much reduced and 1 is the smallest of all.

According to the relative number of coverts and rectrices, birds divide naturally into three groups: (1) coverts and rectrices of the same number; (2) coverts more numerous than rectrices; (3) coverts less numerous than rectrices.

In all normal individuals, the tail-feathers of a bird are arranged in pairs, an equal number on each side of the mid-line of the pygidium. In the following tables therefore the condition on only one side is referred to. The rectrices are numbered from the middle outwards, no. 1 being next to the mid-line. The major coverts are numbered correspondingly. The formula "6-6" indicates that there are six rectrices and six major coverts on each side of the pygidium; "6-4" shows six rectrices but only four coverts while "8-6" shows eight rectrices and six coverts. The number of rectrices is invariably placed first.

It should be clearly understood, and I cannot emphasize the point too strongly, that the statements made here in regard to number and position or size of the coverts and rectrices are based wholly upon my own recent and hasty observations. They are thus liable to correction, particularly with reference to the larger groups. When I say for example that the *Passeres* have six rectrices and only five coverts, I am not ignorant of the fact that some *Passeres* have seven rectrices. I merely know nothing about the number and position of the major coverts in such cases, so, for the purpose



of this paper, I ignore them. This statement of my observations is purely introductory and is not intended to be as dogmatic as it sometimes appears.

#### I. COVERTS AND RECTRICES OF THE SAME NUMBER.

- 4-4. *Crotophaga*.
- 5-5. Trochili. Cyseli. Caprimulgi. Cuckoos. Toucan (*Selenidera*). *Jacana*. *Botaurus*.
- 6-6. Pici. Columbæ. Most Accipitres. Curassows. Nearly all waders and shore-birds. Cranes. Most terns and small gulls. Cormorants. Gannets. Man-of-war-birds. Petrels.
- 7-7. *Zenaidura*. Gannets.
- 8-8. A single individual of *Lagopus*.
- 9-9. *Tetrao*.
- 10-10. Pelicans. Loons. Penguin.

#### II. COVERTS MORE NUMEROUS THAN RECTRICES.

Except in some owls and the remarkable case of the toucan given below, the additional coverts are at the base of, or beyond, the outermost rectrix on the side of the pygidium. In owls having 6-7, the extra covert *seems* to be between 4 and 5 but probably this is due only to shifted positions of 5, 6 and 7.

- 5-6. A single individual of *Botaurus*, on one side only.
- 6-7. Owls. Osprey. *Cancroma*. A single individual Flamingo. Some gulls.
- 6-8. Some young owls. Some ospreys. *Anhinga*. Albatross. *Cephus*.
- 6-9. Some individuals of *Cephus* and some albatrosses.
- 7-8. Flamingo. Most ducks.
- 7-9. Some ducks.
- 8-9. Some ducks. Geese. *Fratercula*.
- 8-10. *Dafila*. *Ossifraga*.
- 9-10. Some ducks.
- 10-12. Swan.

5-8, 10 or 11. Toucan (*Ramphastos cuvieri*). This is the most extraordinary case of supernumerary coverts, I have seen. As a rule there are 10 or 11 major coverts in a single, distinct but crowded series. In one individual however I found only 8 coverts and it may be there is considerable individual diversity. Ordinarily there are two coverts over the base of rectrix 2, with none over rectrix 1; covert 3 is between rectrices 2 and 3 while covert 4 is directly over rectrix 3; covert 5 is between rectrices 3 and 4, while covert 6 is over rectrix 4; covert 7 again is between rectrices 4 and 5, and covert 8 is over rectrix 5; coverts 9-11 are on the corner of the pygidium, outside the rectrices. In the individual with only 8 coverts, the indications are that coverts 1, 10 and 11 are missing. A further study of this remarkable toucan is much to be desired.

### III. COVERTS LESS NUMEROUS THAN RECTRICES.

In every case examined, the reduction in the number of coverts seems to take place at the outer end of the series, but it is possible that in the Passeres and birds with a similar arrangement, covert 1 is wanting rather than simply displaced. In those unusual cases where there are two coverts fewer than the rectrices, one of the missing coverts is possibly no. 1. The question could probably be answered by examination of large embryos or nestlings of the Guinea-fowl or European Quail.

5-4. Motmot (*Baryphthengus ruficapillus*).

6-5. Passeres. Psittaci. Kingfishers. Trogons. Some small hawks. Rails.

6-4. *Coturnix*. *Cyrtonyx*.

7-6. Coot. Gallinules.

8-7. *Lagopus*.

8-6. *Numida*.

9-8. Pheasants. *Bonasa*.

It will be seen from the above data, that relatively few birds have more coverts than rectrices and these are chiefly natatorial birds. Among land-birds, only the owls, the osprey and the big toucan have supernumerary coverts, while of water-birds there are

the Flamingo, the Anseres, the Snake-bird, the Giant Petrel, albatrosses and auks. In *most groups* of birds, the coverts are of the same number as the rectrices, as shown by the various "picarian" birds, the pigeons, the diurnal birds of prey, the curassows and a few other land birds, and the numerous waders, gulls, terns, petrels, Steganopodes, loons and penguins, among water-birds. There can be little doubt that *most species* of birds have fewer coverts than rectrices, for here we find the bulk of the land-birds, Passeres, parrots, kingfishers, trogons, motmots, most gallinaceous birds and a few small hawks; oddly enough the Fulicariæ alone among water-birds have the number of major coverts reduced.

For future reference and to aid in the further investigation of this subject, it seems desirable to put my observations on record here. I have arranged them under the orders recognized and listed by Sharpe in 1891 because no more recent classification of birds seems to me as generally satisfactory as his. I have examined none of the Ratitæ, Crypturiformes, Opisthocomiformes, Heliornithiformes, Podicipediformes, Eurylaemi or Menuræ.

GALLIFORMES. A large curassow from Brazil (species undetermined) had 6 rectrices and 6 coverts. A fine large *Tetrao* showed 9-9 and a single individual of *Lagopus* showed 8-8. All the other galliformes examined by me showed fewer coverts than tail feathers. In *Numida* the formula is 8-6 and in *Coturnix* 6-4. A single specimen of *Cyrtonyx* also showed 6-4, but the pygidium was injured, so I am not sure of this genus. The other genera<sup>1</sup> examined were *Canachites* (8-7), *Tympanuchus* (9-8), *Bonasa* (9-8), *Francolinus* (7-6), *Phasianus* (9-8) *Oreortyx* (6-5) and *Ortyx* (6-5).

COLUMBIFORMES. The number of major coverts corresponds to that of the rectrices. Their position is on the outer side of the base of each tail-feather at the middle of the tail but soon they lie above the rectrices. The genera examined were *Columba* (6-6), *Ectopistes* (6-6), *Zenaidura* (7-7; on one side in one individual, 7-8), *Melopelia* (6-6) and *Chaemepelia* (6-6).

RALLIFORMES. Three species of *Rallus* and one of *Porzana* show 6-5, and covert 1 is smaller than 2 and sometimes quite small;

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<sup>1</sup> For convenience I use the generic names of the 'British Museum Catalogue.'



an unidentified king rail from Brazil showed 6-6. An unidentified coot and a gallinule, also from Brazil, showed 7-6. The position of the coverts is as usual.

COLYMBIFORMES. A loon showed 10-10, with each covert over its rectrix except 1.

SPHENISCIFORMES. A penguin (*Spheniscus*) from Chili showed 10-10, each covert over its rectrix. There is great difficulty in both the loon and the penguin in distinguishing the major from the other coverts, so densely are the feathers crowded on the pygidium.

PROCELLARIIFORMES. In *Procellaria*, *Fulmarus* and *Daption* the number of coverts is the same as the number of tail-feathers, 6-6; in one petrel, I found only 5 coverts on one side. But in *Ossifraga* (8-10) and *Diomedea* (6-8 or 9) the coverts are distinctly more numerous than the rectrices. The extra coverts are beyond the outer rectrices.

ALCIFORMES. In *Uria* (= *Cepphus*) the formula is 6-8 or 9, and one of the extra coverts may be at the inner end of the series; it is apparently a supernumerary covert in the strictest sense, as it is probably not really homologous with the other major coverts; this is indicated by its small size and its position above rectrix 1 on its inner side. The coverts are seldom over their rectrices, though 1 and 2 generally are; covert 7 is over rectrix 6, but 3, 4, 5 and 6 lie between rectrices. The third or fourth covert is longest, 2 and 1 being decidedly smaller. In *Fratercula*, the formula is 8-9 and the coverts are almost or quite over their respective rectrices; 9 is outside rectrix 8. The third or fourth covert is clearly longest.

LARIFORMES. In *Sterna*, *Rynchops* and a few gulls, the formula is 6-6 but in two large unidentified gulls, it was 6-7 or 6-8; the outer coverts are small and might easily be overlooked. In most gulls covert 1 is a little smaller than 2.

CHARADRIIFORMES.—In *Jacana*, the formula is 5-5 but in *Arenaria*, *Aegialitis*, *Numenius*, *Bartramia*, *Calidris* and *Pelidna*, it is 6-6. I regret greatly I could examine none of the shore-birds having more than 12 rectrices.

GRUIFORMES. In *Grus americana*, the arrangement is 6-6 and each covert is over its own rectrix. Covert 1 is the smallest and 3 is the largest, 2, 4, 5 and 6 being intermediate.

PELARGIFORMES. In *Ibis*, we find 6-6, and the same is true of *Ardea*, *Herodias*, *Nycticorax* and *Tantalus*. *Cancroma* shows 6-7, the extra covert being above rectrix 6. Nitzsch says that he found only *ten* rectrices in *Cancroma*. I had but one specimen and it is unidentified but there are clearly *twelve* rectrices, the number accredited to *Cancroma* in the 'British Museum Catalogue.' The coverts alternate with the rectrices as a rule. In *Botaurus* the formula is 5-5 or occasionally 5-6, suggesting that the reduction in the tail of this genus is quite recent, the extra covert being a relict from the former condition of 6-6. The coverts in the bittern are above the rectrices.

PHOENICOPTERIFORMES. I was fortunate in being able to examine four flamingos. In three, the arrangement was 7-8, but in the fourth it was 6-7. The last specimen had a normal tail but with only twelve rectrices. The first covert is the longest and lies outside the first rectrix.

ANSERIFORMES. The single swan examined showed 10-12, the extra coverts outside the last rectrices and by no means clearly distinct from other contour feathers. In *Branta*, I found 8-9, and also in *Anas*. In *Spatula*, *Cosmonetta* and *Nyroca*, the formula is 7-8 or 9. In *Clangula*, we find 8-9 or 10 and in *Dafila*, 8-10. In *Erismatura*, 9-10 or 11 occur. In all Anseriformes, we find then more coverts than rectrices. In general each covert lies over its rectrix and the additional coverts are at the outer end of the series, where they are often hard to distinguish from the ordinary contour feathers. Occasionally covert 1 lies beside rather than above rectrix 1. In *Clangula*, the series of major coverts is nearer the end of the pygidium at the middle than it is on either side; in other words the covert-series is not parallel to, but divergent from, the rectrix-series.

PELICANIFORMES. In all steganopodous birds, except *Plotus*, the number of coverts corresponds to the number of rectrices; the same is true of their position as a rule. But in relative size there is more diversity. In *Phalacrocorax*, we find 6-6, with the extraordinary condition of the coverts described above (p. 115). In *Sula* we find 6-6 or 7-7, coverts and rectrices corresponding in position and size. In *Fregata*, there are 6-6, with coverts 2 and 3 the longest but 1 not much smaller. In *Phaethon*, I find 7-7 or 8-8,

with 1 the longest. In *Pelecanus*, 10-10 is the arrangement, each rectrix with its own covert above it. In *Plotus*, we find 6-8 or 9 with all the coverts small and narrow and 3 or 4 the longest.

CATHARTIDIFORMES. In a half grown King Vulture (*Sarcophamphus*) there are six pairs of large rectrices each overlaid very regularly by a major covert. The same is true in the Turkey Buzzard (*Cathartes*) but here covert 1 is smaller than 2 or 3.

ACCIPITRIFORMES. In *Circus*, *Astur* and *Haliaeetus*, we find 6-6 and in the eagle, the first is somewhat smaller than the second. In *Falco albigularis* and *Cerchneis sparveria*, the arrangement is distinctly 6-5 as in Passerine birds. In *Pandion*, on the other hand, we find 6-7 or 8 as in owls; the first covert is a trifle smaller than the second. *Pandion* thus agrees with the anseriform birds in having more coverts than rectrices. The owls are notable among land birds in having the number of coverts exceeding that of the tail-feathers. The first is often smaller than the second as in *Pandion*. In *Bubo*, *Megascops*, *Nyctea*, *Glaucidium*, *Asio* and *Nyctala* we find 6-7. In nestlings of *Bubo* and *Asio*, the arrangement is 6-8, indicating a very recent loss in owls, of the eighth covert.

CORACIIFORMES. The kingfishers (*Ceryle* and at least one unidentified genus) have the passerine arrangement, 6-5, a covert over each rectrix except 1. In the Cypseli (*Chætura*), Trochili (*Archilochus* and 2 or more unidentified genera) and Caprimulgi (*Chordeiles*, *Antrostomus*) the formula is 5-5, a covert nearly over each rectrix. In the only motmot examined, *Baryphthengus*, the formula 5-4 occurs; I have noted it in no other bird. The coverts lie over rectrices 2-5.

TROGONES. The Cuban trogon, *Priotelus*, is the only member of this order available to me and it has the typical passerine arrangement, 6-5.

COCYGES. Some unidentified Brazilian cuckoos agreed with *Coccyzus* in the formula 5-5, each covert agreeing well in relative size and position with the rectrices.

PSITTACIFORMES. All the parrots I examined (*Conuropsis* and at least two different, unidentified genera) agreed in the passerine arrangement 6-5 and showed no peculiarities of their own. Two of the genera lacked the oil-gland.

SCANSORES. Only toucans have been accessible to me, of this



order, and of these only two genera. In *Selenidera*, we find what is probably the typical arrangement, 5-5, the inner coverts alternating with the rectrices but the outer ones lying over them. The extraordinary condition found in *Ramphastos curieri* is described above (p. 117).

PICIFORMES. The normal formula for woodpeckers seems to be 6-6, but the sixth covert is small and may be wanting, giving the passerine formula, 6-5. Owing to a line of contour feathers extending down on each side of the pygidium and joining the series of major coverts it is difficult to determine beyond question where the coverts end. In the larger woodpeckers, particularly in *Phlaeotomus*, the middle rectrices are so stout the major coverts seem to have been pushed further to the side than usual, so that covert 1 lies between rectrices 2 and 3, covert 2 is between 3 and 4, 3 is over rectrix 4, 4 is over 5 and 5 and 6 are over 6. The genera examined are *Colaptes*, *Melanerpes*, *Dendrocopus*, *Picoides* and *Phlaeotomus*.

PASSERIFORMES. All the specimens of passeriform birds examined showed the characteristic 6-5 arrangement, the middle pair of rectrices apparently lacking coverts. Study of developmental material alone can decide whether covert 1 is really wanting or is merely displaced, though it seems probable that the latter is the case. The genera examined, selected quite at random, are *Tityra*, *Xanthoura*, *Turdus*, *Trochalopecton*, *Acanthorhynchus*, *Petrochelidon*, *Bombycilla*, *Piranga* and *Hedymeles*.

The question as to the significance of the data given above is interesting but deductions must be drawn with care from such fragmentary material. The subject is just opened up in this paper and much more work must be done before the importance to be attached to the condition of the major coverts can be determined. It is possible that habits may play an important part in the arrangement of the coverts in some cases. The recent interesting discoveries of Mr. C. W. Beebe regarding the nestlings of toucans and the way they hold their tail suggests that the extraordinary arrangement of the major coverts in *Ramphastos curieri* is the possible result of such a habit. Whether there is any phylogenetic significance in the number and character of the major, upper coverts remains to be discovered but it is at least suggestive that the

flamingos are distinctly anseriform in this particular. Finally it may be added that the study of the under tail-coverts has never been undertaken and will probably give results as interesting and suggestive as those afforded by the study of the major upper coverts.

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## FERRUGINOUS STAINS ON WATERFOWL.

BY FREDERIC H. KENNARD.

SEVERAL years ago at a meeting of the Nuttall Ornithological Club at which I was present, there was an informal discussion among some of the members, regarding the ferruginous suffusion that occurs so frequently on the heads of certain geese, especially the Snow Geese and Blue Geese.

Some of those present seemed inclined to the belief that it might be a phase of adult plumage, while others thought it merely a rusty stain, such as occurs sometimes on the under parts of many of our ducks.

One eminent ornithologist then pertinently inquired, why, if it were a stain, it should be so strictly confined, as a rule, to the forehead and cheeks, with swans as well as geese, and why also it should occur in certain species of waterfowl, but not in others having essentially the same habits and haunts. Another member wisely suggested that a chemical analysis should be made of some of the rusty feathers in question; but nothing further was done at that time.

Personally, I had, without giving much thought to the subject, always supposed this to be a stain caused by extraneous matter deposited in some way by the muddy water in which the birds fed.

During the winter of 1916, my interest in this subject was again awakened, while on a collecting trip after Blue Geese along the Louisiana marshes bordering the Gulf of Mexico, and I have been able, during the past year, to gather data from a number of museums and private collections, which included large series of skins

of the genus *Chen*, Blue Geese, Lesser and Greater Snow Geese, and Ross's Geese, as well as a series of Emperor Geese, all apt to be more or less stained about their heads; and a series of the Canada group of the genus *Branta*, including the Canada, Hutchins', and Cackling Geese, apparently having essentially the same habits and haunts, but which nevertheless remain practically unstained throughout the year.

In view of the fact that there still seems to be a good deal of uncertainty among some of our ornithologists regarding these ferruginous suffusions, the following notes, in which I have tried to answer the questions raised at the Nuttall Club meeting, may be of interest.

During the summer of 1917, Professor S. C. Prescott of the Massachusetts Institute of Technology very kindly offered to make a chemical analysis of such stained plumages as seemed necessary. He examined feathers from various parts of Blue Geese, Greater and Lesser Snow Geese, Mallards, Gadwalls, Blue-winged Teal, Green-winged Teal, Baldpates, Shovellers, Canvas-backs, Ring-necked Ducks; and Ruddy Ducks, and reported that "the results of these analyses in all cases showed that the coloration was due to iron, which was deposited in the form of ferric oxide ( $\text{Fe}_2\text{O}_3$ ) on the tips of the feathers. The white feathers showed the coloration most pronouncedly, as was to be expected, but even the dark brown and black feathers of some species showed the presence of the iron. It is easy to show by micro-chemical methods that the oxide of iron is deposited on the outside of the feather, and does not penetrate into the tissue."

Professor Prescott also writes that "it seems to me quite likely that different kinds of feathers from the same bird will exhibit differences in the degree of coloration they are likely to undergo. The colored feathers have a different chemical structure, and will be less stained, just as colored cloths will dye less readily than white ones."

One of the birds that we examined, for instance, an adult male Ring-necked Duck, collected among the sloughs of the Mississippi Delta, had its white belly completely covered with stain, while its black breast appeared nearly as glossy as that of an unstained bird, and yet these same black feathers gave a positive reaction of oxide



of iron. An adult Mallard drake, collected on the Mississippi Delta, was badly stained all over its belly, and the dark feathers of its breast, on which the stain was hardly noticeable, gave a positive reaction. The white collar was badly discolored, while the iridescent green feathers of the neck immediately above the collar, apparently just as glossy and green as ever, also gave a positive reaction.

In the meantime Mr. H. S. Swarth, of the University of California, called my attention to a similar investigation away back in 1910 by Dr. Joseph Grinnell, which had previously escaped my notice,<sup>1</sup> in which he writes as follows regarding the Red-throated Loon,—“Common, and thought to be breeding about the head of Cordova Bay. Two adult specimens, taken there June 9 and 10, have the entire lower surface, where it is normally snowy white, of a bright ferruginous tinge. This color is intensest on the exposed portions of the feathers, suggesting adventitious origin. . . . Dr. M. Vaygouny of the Department of Chemistry of the University of California, determined by analysis that the discoloration is due to the presence of ferric oxide ( $\text{Fe}_2\text{O}_3$ ), probably deposited from the water of the marshes in the immediate locality. As the Red-throated Loon moults in the spring, the discoloration must have been acquired since April 1; and furthermore, the species probably does not arrive from the south until that date at earliest. Therefore, the deposit has been surprisingly rapid. The iron oxide in the water is said to result from bacterial action, and precipitation is liable to occur freely on organic substances of certain textures. Evidently the loon's feathers are especially favorable. The same deposit was noticed to a less extent on certain other birds of the same locality, as hereinafter noted.”

Again in the same publication, Dr. Grinnell writes of three Northern Phalaropes, collected at the Head of Cordova Bay, June 11 to 14, which “have the lower surface of the body rusty-stained, as in the case of the loons from the same place before described.”

The stain is very persistent, but invariably disappears with the moulting of the feathers, when the bird is in captivity, or when the

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<sup>1</sup> Birds of the 1908 Alexander Alaska Expedition with a Note on the Avifaunal Relationships of the Prince William Sound District, by Joseph Grinnell, University of California Publications in Zoölogy, Vol. 5, No. 12, March 5, 1910.

bird has changed its feeding ground to a locality where there is no ferric oxide present.

The next question is,—why, when the stain does occur, should it be confined so generally to the heads of the birds under consideration. As a matter of fact, it is not so strictly thus confined as many people seem to suppose, but occurs frequently on their bellies and tibiae, and less often on their breasts.

In the case of the Blue Geese, with whose feeding habits I am familiar, the stains on their heads seem undoubtedly due to their method of feeding about the shallow sloughs among the marshes and flats along the Louisiana coast. The crops of all those birds which I have examined, which contained anything at all, were full of the roots of certain tall, grass-like plants, which grew about the shallow sloughs and wet flats, but which I did not identify. What seems a simple explanation is, that the feeding bird, standing in the shallow water with his belly usually clear of the surface, sticks its head beneath the surface and digs with its bill in the mud among the roots of the grasses and decayed vegetation, riling the muddy water, and gradually by repeated application acquiring a deposit of oxide of iron upon its forehead and cheeks, and perhaps the rest of the head and neck. It is possible that the alternate wetting and drying may aid in the deposit. If the water be deep enough, so that the tibiae, belly and breast become immersed, these parts of the plumage may also become discolored. The deposit seems to be rapidly acquired.

Mr. W. L. McAtee of the Biological Survey has written very fully of the habits of the Blue Goose in feeding on the roots of certain grasses.<sup>1</sup>

I am not personally familiar with the feeding habits of the other members of the genus *Chen*, except with those of the few Lesser Snow Geese that consort with the Blue Geese in southern Louisiana. Their feeding habits, so far as I have been able to observe, are exactly like those of the Blue Geese, digging just as they do for their food among the grass roots of the marshes and shallow sloughs. It seems reasonable to infer, however, that the other members of

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<sup>1</sup> Notes on *Chen cerulescens*, *Chen rossi*, and other Waterfowl in Louisiana. 'The Auk,' July, 1910, pp. 337-339.

the *Chen* group, the Greater Snow Goose and Ross's Goose, and also the Emperor Goose, all of which are apt to become discolored about their heads, undoubtedly acquire the stain in the same way, viz, — by digging.

The last question,— why the rusty stains occur with certain species of waterfowl, but not with others having essentially the same habits and haunts,— is perhaps more difficult to answer definitely, owing to our lack of knowledge of the habits and haunts of some of them. The breeding ground of the Blue Goose is unknown, but was supposed by Professor Wells W. Cooke to be somewhere in the interior of Ungava in the northern part of the Labrador Peninsula,<sup>1</sup> and the bird has been reported from Baffin Land.<sup>2</sup> I find, on looking over a series of more than a hundred Blue Geese, that adults taken early in their autumn migration, are usually unstained or very slightly so, while the juvenal and immature birds are free from discoloration. On the other hand, all the Blue Geese, taken during the winter, along the Louisiana marshes, are more or less stained. Those taken nearest the Mississippi Delta seem to be most discolored; and those taken in Cameron Parish less so; while birds collected in Galveston Bay, Texas, are apt to be comparatively free from stain. Of the young birds that arrive in Cameron Parish early in October, those which were hatched late and are still in juvenal plumage are unstained. As soon, however, as they begin to moult and to show white feathers about their heads and necks, these feathers begin to acquire the rusty stain, while similar birds taken in Galveston Bay remain comparatively unstained.

Wherever the breeding range of the Blue Goose may be, it appears that those birds which have acquired the stain while wintering in the South, lose it during their summer moult, and as a rule start south unstained. Those birds that fly south along the Mississippi River may acquire the stain anew, while feeding among the bordering bayous and sloughs, while those that fly farther west, and come down into Texas, may remain unstained.

Of the Lesser Snow Geese examined, about fifty per cent were

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<sup>1</sup> Distribution and Migration of North American Geese, Ducks and Swans, U. S. Dept. of Agriculture, Biological Survey, Bulletin 26.

<sup>2</sup> Bernard Hantzschs Ornithologische Ausbeute in Baffinland by Dr. Erich Hesse, in 'Journal für Ornithologie,' April, 1915.

unstained. Adults, when they reach their winter range, may or may not be discolored, while the young of the species usually arrive unstained. Louisiana birds become more stained during the winter, while Texas birds remain comparatively unstained. In California, where the Lesser Snow Goose and Ross's Goose winter in large numbers, together with various kinds of Canada Geese, in the San Joaquin and Sacramento Valleys, the percentage of stained birds is comparatively small. Mr. Swarth writes: "I note on our California collected birds that this stain is most apparent on specimens collected through the fall. In such birds as undergo more or less of a moult during the winter or early spring, it seems to disappear by April. The inference is, that it is acquired in their northern home." I have never visited these valleys, but am told that the birds feed among grain fields, pastures, and adjacent swamps, instead of muddy sloughs, as in the Louisiana marshes. The conclusion is obvious, that these birds lose their stain because of the absence in this locality of muddy, iron-bearing waters such as are found in the Louisiana marshes.

We are told by Prof. Cooke, that the breeding range of the Lesser Snow Goose reaches from the mouth of the Mackenzie River east to Coronation Gulf and the Melville Peninsula; and the bird has since been taken on Banks Island.<sup>1</sup> In all this expanse of country, conditions must vary greatly, and it seems reasonable to suppose that those geese that moult and summer among fresh water ponds remain unstained, while those birds that live about the deltas, or muddy flats along the iron-bearing rivers may, after they moult, acquire the stain which they bring south with them. To put it more concisely, it appears that the Lesser Snow Goose may or may not acquire the stain upon its northern range. Those birds that do acquire it, lose it if they start moulting upon their winter range in California, while those birds that winter along the marshes bordering the Gulf of Mexico are apt to become more stained the nearer they are to the mouth of the Mississippi River.

Very little is known of the breeding range and habits of the Greater Snow Goose. Prof. Cooke seemed to think it probable that they "breed for the most part in Victoria Land," though

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<sup>1</sup> Summary Report of the Geological Survey, Department of Mines, Canada, 1916.

I have found no record from there. They have, however, been taken in Labrador and a breeding female and downy young were secured in north Greenland. Wherever their summer range may be, the only unstained specimens examined were young birds taken early in October; while over ninety-five per cent of them, both immature and adult, come south discolored about their heads; and a majority of them also about their tibiae, bellies, and breasts, with a stain that must have been acquired after their summer moult, either upon their breeding grounds or somewhere in their northern range. As they come south later than the Lesser Snow Goose, usually not arriving on the Atlantic Coast before the latter part of December, they have apparently had more time to acquire the stain, which is usually much heavier than in the case of the Lesser Snow Goose, which arrives south in October. Prof. Cooke writes that "there is no sharply defined line in the Mississippi Valley between the winter ranges of the greater and the lesser forms. In general the greater snow goose is more common east of the Mississippi River, and winters from southern Illinois to the Gulf."

The Greater Snow Goose doubtless occurs as a straggler along the Mississippi Valley, just as we occasionally get a Blue Goose or a Lesser Snow Goose on the Atlantic Coast; I have seen a number of specimens erroneously tagged *Chen hyperboreus nivalis*; but out of the large series of skins examined I have seen only two from the Central States really referable to that subspecies, and these had wandered clear out to Dakota.

These birds seem to winter along the Atlantic Coast from New Jersey to North Carolina, feeding there along the sandy beaches, or adjacent flats thrown up by the action of the sea, and presumably free from iron deposit.

The breeding range of the Ross's Goose is, like that of the Greater Snow Goose, still unknown; but wherever it may be in the far north, while this bird is not so frequently discolored as its larger cousins, the Greater Snow Geese, a small proportion of them do acquire the stain sometime after the summer moult, which they bring to California, and like their cousins, the Lesser Snow Geese, lose it there, when they start moulting.

The breeding range of the Emperor Goose extends along the west coast of Alaska from the Kotzebue Sound south to the Kuskoquim



River, principally about the delta of the Yukon River. The birds are also found in East Siberia, and are said to winter among the Aleutian Islands. Owing to the comparative rarity of this species, I have been able to examine but thirty-three specimens. Of these, seven were unstained; one taken on Bristol Bay, Alaska, on May 16, and the other six September birds, either juvenal, or adults that had but recently finished their moult. The remaining birds were all stained, those from East Siberia slightly so, while those from Alaska were very badly discolored.

I have been unable to obtain any data as to their stomach contents; but Mr. F. Seymour Hersey tells me that they are marsh feeders, reminding him in their habits of the Blue Goose, with the feeding habits of which he is also familiar. These birds apparently acquire this stain along the marshes of the west coast of Alaska, and about the Yukon Delta, and presumably their feeding habits must be similar to those of the genus *Chen*.

Let us now turn to the Genus *Branta*, which seems to remain unstained throughout the year. We know more about the range, both winter and summer, of the Canada Goose, a stained specimen of which is very exceptional, and we might logically argue that its unstained condition throughout the year is owing to the fact that, while its breeding range is enormous, it really is a bird of the interior, breeding usually about the clean fresh-water ponds and lakes rather than among the deltas and flats of the sea-coast; and wintering generally either in the country west of the Mississippi, or on the Atlantic Coast, and away from the muddy iron-bearing waters of the Mississippi Delta.

In what way, however, are we to account for the fact that the Hutchins' Goose, which winters in California, together with the Lesser Snow Goose, and which breeds in the Kowak Valley in Alaska, and from the mouth of the Mackenzie east along the Arctic shore to the Melville Peninsula, remains unstained, and in practically the same range, as that in which the Lesser Snow Goose often becomes discolored? In this case, the haunts are approximately the same.

The Cackling Goose breeds along the west coast of Alaska from Kotzebue Sound south across the Yukon Delta to the Alaska Peninsula throughout approximately the same range as the Emperor

Goose, and remains as a rule unstained. I have examined a few Cackling Geese with cheeks slightly stained, but discolored specimens of this species, as well as of the Hutchins' and Canada Geese, are so uncommon as to be negligible.

I have not attempted to gather any data regarding the other members of the *Branta* group. The White-cheeked Goose, a bird of the Pacific slope, has presumably habits similar to its cousin, the Canada Goose, and but seldom acquires the stain, while the Brant are salt-water birds.

The dark feathers of the heads and necks of this group of birds naturally do not show the stain as do those with the white heads; but their cheeks should show it, if present, and their lower parts as well. Such stains are, however, very exceptional, and the deduction seems reasonable, that their feeding habits cannot be the same. According to a letter from Mr. McAtee, "the stomach contents bear out this idea. *Branta* contains more largely things which may be cropped and few root stocks; while *Chen* has more largely the latter. On the whole also, *Branta* spends more time in the water than *Chen* and feeds more on water plants, while *Chen* feeds more on land, where not only digging, but often hard digging is required to get the things it wants."

As a summary of the above notes, and in answer to the questions asked at the Nuttall Club meeting, it seems to be proven:

First: That the ferruginous suffusion is caused in every case by an extraneous deposit of oxide of iron ( $\text{Fe}_2\text{O}_3$ ) on the outside of the tips of the feathers;

Second: The stain upon the heads of certain of our geese seems undoubtedly to be brought about by their habit of digging for their food among the mud and decayed vegetation in the iron-bearing waters of the marshes and shallow sloughs, among which they feed at certain seasons, particularly in places adjacent to the deltas of the great muddy rivers;

Third: Those species of the *Branta* group which remain unstained, and inhabit essentially the same haunts as those of the *Chen* group or the Emperor Geese, which become stained, do not have the same feeding habits. They are apt either to frequent deeper waters where they feed upon the grasses and aquatic plants, or else they are found upon the drier fields and prairies in preference to shallow

muddy sloughs; and they are as a rule croppers rather than diggers.

In general, it appears that swans, geese, and ducks, or other waterfowl, may become stained if their feeding habits bring them among iron-bearing waters; particularly about the deltas of such great muddy rivers as the Mississippi, the Mackenzie or the Yukon.

Swans frequently acquire the stain about their heads somewhere on their summer range, but those that winter in the east appear to lose it during their sojourn on the Atlantic Coast, while those wintering on the Gulf are apt to retain it.

Those ducks that winter along the Atlantic Coast remain, as a rule, unstained while those wintering along the Louisiana Coast, particularly about the Mississippi Delta, are apt to become badly stained.

While these notes have been limited to the few species actually examined chemically, there are many others that appeared to be similarly stained, both from this country and abroad.

In assembling the data, upon which these notes are necessarily based, I am indebted, not only to the ornithologists already mentioned, but to several others who have very kindly supplied me with data from collections to which they had access. My thanks are particularly due to Messrs. Bangs, Bent, Bishop, Brewster, Dwight, Fleming, Oberholser, Osgood, Stone, and Taverner, members of the A. O. U.; and to Messrs. E. A. McIlhenny of Avery Island, Louisiana, and John Heywood of Gardner, Mass., game conservationists.

## THE DESCRIPTION OF THE VOICE OF BIRDS.

BY R. M. STRONG.

It was with no small interest that I followed a recent controversy<sup>1</sup> in 'The Auk' over the use of musical signs in describing the voice of birds. We have all read and heard much on this subject. We not only have a very difficult problem in the description of bird voice but we also have a lack of suitable terms for the sounds made by birds. There is, for instance, no really good word to designate single bird sounds except for the word note, which is unsatisfactory in several respects. After considerable study of various possible expressions, which might be used to designate sounds in general made by birds, I adopted "voice" as a term.

I have had an experience of twelve years with about twenty classes of university students in a course which included teaching bird voice. During that time, I have tried out various methods and the following account is a result.

It has been my experience that descriptions of bird voice mean very little until one has heard the performance or a good imitation of it. Then descriptions often help in an identification or assist in efforts to memorize the song. I have tried reproducing musical-scale records of bird songs on various musical instruments, but without getting anything that sounded like the bird's performance. Nor have I known anyone else who has had a different experience.

In conducting class work with birds, I have not found the use of musical scales or of modifications of them often practicable. I have been able furthermore, to teach people without musical ability to recognize many birds by their voice. Occasionally, students with sufficient musical ability and training to use musical-scale symbols occur, but even they have depended largely on other methods in my classes.

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<sup>1</sup> Methods of Recording Bird Songs.

Moore, R. T. Auk. XXXII. Oct., 1915, pp. 535-8.

" " " XXXIII. April, 1916, pp. 228-9.

Saunders, A. A. Auk. XXXII. April, 1915, pp. 173-183.

" " " XXXIII. Jan., 1916, pp. 103-7.

" " " XXXIII. April, 1916, pp. 229-230.

It is my practice to subject the vocal performances of birds to analyses which may be employed with the voice of other groups of animals. In fact, some of my first ideas on the subject came from a study of methods used by Professor Reighard of the University of Michigan, in studying the voice of frogs and toads.

The following features are of first importance, in my experience, when the voice of a bird is heard for the first time: duration, quality, loudness, general pitch, complexity, accent, stress, and relation to known sounds.

Under duration, we note the time occupied by a vocal performance. If simply a chirp, for instance, we indicate whether it is short or relatively long. Longer performances are measured in seconds, the number of which is usually surprisingly less than would be estimated without timing.

Quality is of course important, and it may be described in many ways. One of the first things I have students do is to observe whether the sound is relatively musical or unmusical. Some bird sounds are not easily classed as either, but a great number can be so distinguished. Thus, I find no one hesitating to call the voice of the Wood Thrush musical and that of the Kingbird unmusical.

The first time I take up bird song with students, I discuss the relation of overtones to quality of sound and some other principles of physics pertinent to the subject. Such terms as rich, thin, bell-like, flute-like, resonant, reedy, metallic, rasping, harsh, etc., are helpful in describing quality. It is also very useful to make comparisons with other known sounds.

Under general pitch, we observe whether the voice is relatively high or low in pitch. As might be expected, the results are variable, but the effort is worth while in establishing associations for the student. Occasionally, students with sufficient musical equipment are encouraged to use musical scale symbols also. Any other system which the student finds practicable for describing pitch variations is encouraged. It is of course pointed out that birds do not sing according to the musical scale and that musical scale records are only approximate at best, especially because of variability in vocal performances.

Under complexity, are included some of the most important characteristics of bird voice. Is the vocal performance a single



note or do we have more than one note? If more than one note occurs, how many? Is the song relatively intricate or simple? Do the notes come in rapid succession? May they be grouped and how? The first notes of the song of the Song Sparrow, for instance, form a distinct group with a pitch, quality, loudness, and tempo which are exceedingly characteristic for the bird. They at once suggest the species to anyone familiar with the song, before the balance of the song is produced.

The description of that portion of the Song Sparrow's song which follows the opening group of notes is difficult, and very variable results are obtained by different students. Even though the attempts are not uniformly successful as descriptions of the song, the efforts involved are worth while for the student.

The occurrence of accents or stresses must be noted. I have found these especially important in studying the songs of warblers, for instance. The songs of the Robin, Red-eyed Vireo, Baltimore Oriole, Scarlet Tanager, and Rose-breasted Grosbeak are more or less indistinguishable to beginners. I find that the study of variations in accent, stress, and grouping of notes helps greatly in learning to distinguish the songs of these birds.

The song of the Winter Wren is notable for its unusual complexity and duration. As I have heard this song in northern Michigan and Wisconsin, a group of notes which occurs at the end is peculiarly characteristic and helpful in teaching others to learn to recognize the song. It consists of a series of very thin and rapidly repeated notes with a decided diminuendo at the end. There is a tendency to "sharp," i. e., to rise slightly in pitch towards the end of the series. The last notes at the ordinary distance one hears the song are barely audible, and the whole song seems to fade out into silence.

These methods are not only useful for students, but they are the only schemes which I have found worth while for my own studies of bird voice.

## NOTES ON THE BREEDING BIRDS OF PENNSYLVANIA AND NEW JERSEY.

BY RICHARD C. HARLOW.

(Continued from p. 29.)

74. *Otocoris alpestris praticola*. PRAIRIE HORNED LARK.— An irregularly distributed breeding bird over most of Pennsylvania north of Northampton, Schuylkill, Northumberland, Cumberland and Franklin Counties. I have found it nesting on the Pocono plateau and in Huntington, Center, and Greene Counties. Data on seven nests give: average set, 3 (4-5); average date, March 25 (March 18); a second set, May 20.

75. *Cyanocitta cristata cristata*. BLUE JAY.— Breeds commonly, though in some places locally, throughout both states. Data on sixteen nests give: average set, 5 (4-6); average date, May 5 (April 29-June 17).

76. *Corvus corax principalis*. NORTHERN RAVEN.— Does not now breed in New Jersey and is nearing extinction in Pennsylvania, making a last stand in the mountains of Snyder, Mifflin, Center, Blair, Clinton, Union, Juniata and Huntington Counties. During 1917 only one pair out of five previously located was present. Nests have seldom been found nearer together than thirty miles, and all have been located on cliffs with one exception, that one being in a pine tree. Data on ten nests give the following: average set, 5 (4); average date, March 4 (February 27-April 12).

77. *Corvus brachyrhynchos brachyrhynchos*. CROW.— Nests abundantly throughout, even along the sea coast of New Jersey with the Fish Crows. Data recorded on 194 nests give: average set, 5 (3-6); average date April 10 (March 26-May 20).

78. *Corvus ossifragus*. FISH CROW.— Nests commonly through southern New Jersey being especially abundant in Cape May County where they breed in colonies as well as singly. In Pennsylvania I have found them nesting in the valleys of the Delaware and Susquehanna as far north as Bucks and Dauphin Counties. Data on thirty-two nests give: average set 5 (4-6); average date, May 14 (April 19-May 24).

79. *Sturnus vulgaris vulgaris*. STARLING.— Now breeding over practically the entire state of New Jersey and well established in Pennsylvania as far west as Altoona, Blair County. It reached Wayne and Center Counties and bred there in 1917. Data on eleven nests give: average set 5 (4-6); average date, April 28 (April 20-May 14).

80. *Dolichonyx oryzivorus*. BOBOLINK.— Very locally distributed in Pennsylvania in the breeding season. They occur regularly as near Philadelphia as Ambler, Montgomery Co. and Newtown, Bucks Co., and I once saw a pair as far south as Tinicum, Delaware Co., where however,

their breeding must be accidental. I have found them common in Warren Co., scarce in Pike, Wayne and Center Counties and one colony in Fayette Co., the most southern locality known to me. They are reported breeding in northern New Jersey but I have had no personal experience in that region. I have data on three nests: 1, Warren, Warren Co., June 2, 1912, six eggs; 2, State College, Center Co., May 30, 1915, four eggs; 3, Oak Hall, Center Co., May 31, 1915, five eggs.

81. *Molothrus ater ater*. COWBIRD.—Fairly common but local in southern New Jersey and somewhat local in Pennsylvania being scarce in the mountainous sections. Data on forty-five eggs: average date May 28 (May 9–June 24). Most in a single nest three, in the nest of a Field Sparrow.

82. *Agelaius phoeniceus phoeniceus*. RED-WINGED BLACKBIRD.—Abundant breeder throughout, but rarer in the northern counties of Pennsylvania. Data on 136 nests give: average set, 4 (3–5); average date, first sets, May 18 (earliest May 7), second sets, June 15 (latest August 4).

83. *Icterus spurius*. ORCHARD ORIOLE.—Generally common throughout southern New Jersey. Common in Pennsylvania south of the middle of the state; absent in the northern counties and in the mountains. Breeds regularly in Center County. Data on twelve nests give: average set, 4 (3–5); average date, May 30 (May 25–June 12).

84. *Icterus galbula*. BALTIMORE ORIOLE.—I have not found this species nesting in New Jersey south of the latitude of Philadelphia. In Pennsylvania it is rather scarce in the southern counties but very common in the northern half of the state. Data on thirty-seven nests give: average set, 5 (3–6); average date, May 28 (May 23–June 20).

85. *Quiscalus quiscula quiscula*. PURPLE GRACKLE.—Nests commonly throughout both states east of the mountains even in some of the ridges east of the main Alleghanies and at Tobyhanna in the Poconos. Data on seventy-two nests give: average set, 5 (3–6); average date, April 28 (April 22–May 14).

86. *Quiscalus quiscula seneus*. BRONZED GRACKLE.—Nests very commonly west of the Alleghanies. Nests and dates differ in no respects from those of the last.

87. *Carpodacus purpureus purpureus*. PURPLE FINCH.—I have found the Purple Finch breeding commonly only in Monroe and Warren Counties and once in Pike. Of three nests found in Monroe County between June 9 and June 16, one contained four half fledged young and two were just being completed.

88. *Loxia curvirostra minor*. RED CROSSBILL.—The sporadic nesting habits of the Crossbill render its breeding possible almost anywhere. It undoubtedly nests at times in the mountainous districts of Pennsylvania and I have seen small flocks in summer rarely in Pike and Wayne Counties, while in Center County, on March 26, 1916, I found two mated pairs, the males singing.

89. *Astragalinus tristis tristis*. GOLDFINCH.—Breeds commonly

though sometimes locally throughout both states. Data on fifty-three nests give: average set, 5 (3-6); average date, July 26 (July 10-September 3).

90. *Spinus pinus*. PINE SISKIN.—The same remarks apply to this species as to the Crossbill. During the spring of 1917 they remained until May 15 in Center County and until June 8 in Wayne but showed no intention of breeding. A large number did nest in Warren County, however, in 1912, and a set of three eggs taken there on April 30, 1912, is in my collection.

91. *Poecetes gramineus gramineus*. VESPER SPARROW.—Very common, breeding throughout. Data on twenty-six nests give: average set, 4 (3-5); average date, May 8 (May 2-June 13).

92. *Passerculus sandwichensis savanna*. SAVANNAH SPARROW.—I have failed to find this bird breeding in southern New Jersey. In Pennsylvania it breeds most commonly in Warren County so far as my experience is concerned; regularly but rather uncommonly in Center County, and rarely in Pike and Wayne. These remarks are based mainly upon the presence of the birds in summer as I have found but two nests: 1, State College, Center Co., Pa., July 20, 1911, two eggs; 2, Warren, Warren Co., Pa., May 19, 1912, four eggs.

93. *Ammodramus savannarum australis*. GRASSHOPPER SPARROW.—Locally common in both states but becoming rare in the northern mountainous counties of Pennsylvania. I noted it in summer for the first time in Wayne and Pike Counties in 1917, one pair in each. Data on ten nests give: average set, 4 or 5 (rarely 3); average date, May 28 (May 22-August 4).

94. *Passerherbulus henslowi henslowi*. HENSLOW'S SPARROW.—Breeds regularly and fairly commonly in Ocean, Burlington, Atlantic and Cape May Counties, New Jersey. In 1913 I discovered a small colony in Huntington County, Pennsylvania, my only breeding record for the state. Data on nine nests from New Jersey and three from Pennsylvania give: average set, 4 (rarely 5); average date, June 4 (May 26-July 16).

95. *Passerherbulus caudacutus caudacutus*. SHARP-TAILED SPARROW.—Breeds commonly on the coast marshes of New Jersey where I have found it much more plentiful than the Seaside Sparrow, especially from Atlantic to Ocean County. Data on forty-five nests give: average set, 4 (sometimes 5); average date, June 4 (May 26-July 12).

96. *Passerherbulus maritimus maritimus*. SEASIDE SPARROW.—Common breeder on the New Jersey coast marshes, being more abundant in Cape May County than elsewhere. Data on nine nests give: average set, 4 (3-5); average date, June 2 (May 30-July 5).

97. *Chondestes grammacus grammacus*. LARK SPARROW.—I saw a pair of these birds on May 11, 1914, evidently breeding, near Alleghany, Pa.

98. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—I have noticed this bird as a fairly common summer resident at Pocono Lake, Monroe County, Pa., and nests have been found there by others.

99. *Spizella passerina passerina*. CHIPPING SPARROW.—Generally abundant. Data on sixty-seven nests give: average set, 4 (2-3); average date, May 15 (May 11-July 6).

100. *Spizella pusilla pusilla*. FIELD SPARROW.—Generally abundant. Data on ninety-four nests give: average set, 4 (3-5); average date, first sets, May 8; second sets, June 20; latest August 6.

101. *Junco hyemalis hyemalis*. JUNCO.—I have found the Junco breeding regularly in the following counties in Pennsylvania: Pike, Monroe, Wayne, Sullivan, Lycoming, Cameron, Elk, Forest, Clinton and Blair, and far more commonly in Warren. It also breeds in Fayette County and the question arises whether these latter birds may not be referable to the Carolina form. Data on sixteen nests give: average set, 4 (3-5); average date, May 20 (May 12-July 20).

102. *Melospiza melodia melodia*. SONG SPARROW.—One of the most abundant and regularly distributed birds. Data on 172 nests give: average set, 4 or 5; average date, May 4 for first sets, earliest, April 26; June 20 for second sets, latest, August 10.

103. *Melospiza georgiana*. SWAMP SPARROW.—In New Jersey I have found the Swamp Sparrow nesting only on the Delaware marshes. It does not seem to occur in summer along the coast. In Pennsylvania it nests abundantly along the Delaware marshes as far north as Bucks County and it outnumbers all the birds found in the localities where it breeds. Sometimes I have found as many as twenty-five nests in a single day. In northern Pennsylvania I have not found it, but it nests in Fayette County in the southwestern part of the state. Data on 186 nests give: average set 4 (3-5, and in one instance 8, although this was certainly a case of two birds making use of the same nest); average date, May 28 (May 14-July 12).

104. *Pipilo erythrophthalmus erythrophthalmus*. TOWHEE.—Common and generally distributed. Data on fourteen nests give: average set, 4 (3-5); average date, May 20 (May 15-August 4).

105. *Cardinalis cardinalis cardinalis*. CARDINAL.—Common in New Jersey south of Trenton, and in southern Pennsylvania, extending farther north along the river valleys, and as far as Center County where it breeds rarely but regularly. Nests also in Greene County in the southwestern corner of the state. Data on sixteen nests give: average set, 3 (2-4); average date, May 1 (April 8-July 15).

106. *Zamelodia ludoviciana*. ROSE-BREASTED GROSBEAK.—In New Jersey I have found it nesting only along the Delaware above Trenton, while in Pennsylvania it breeds regularly near Newtown, Bucks County, and I have found it in summer in the following counties: Pike, Monroe, Wayne, Warren, Clarion, Venango and Alleghany, being especially common in the last. Data on nine nests give: average set, 4 (3-5); average date, May 25, latest, June 13.

107. *Passerina cyanea*. INDIGO BUNTING.—Common and generally



distributed. Data on thirty-seven nests give: average set, 4 (sometimes 3); average date, June 4 (May 28–August 15).

108. **Piranga erythromelas.** SCARLET TANAGER.—Regular but rather scarce breeder in southeastern Pennsylvania and southern New Jersey but much more common in the northern and mountainous portions and in southwestern Pennsylvania. Data on fourteen nests give: average set, 3–4 (rarely 5); average date, June 3 (May 26–August 14).

109. **Progne subis subis.** PURPLE MARTIN.—Common summer resident in Cape May, Cumberland, Atlantic, and Burlington Counties, New Jersey. Very local in eastern Pennsylvania where I have found it nesting in Chester and Monroe Counties. A common breeder in Greene County in the southwestern corner. Absent from the northern counties. Data on eleven nests give: average set, 5 (4–6); average date, June 2.

110. **Petrochelidon lunifrons lunifrons.** CLIFF SWALLOW.—Nests abundantly in the northern half of Pennsylvania and locally in the southern counties. I have not found it in southern New Jersey. Data on sixty-two nests give: average set, 4 (3–5); average date, June 4 (May 26–July 2).

111. **Hirundo erythrogastra.** BARN SWALLOW.—Very common summer resident in most of the area but rather scarce in the Philadelphia region. Data on seventy-five nests give: average set, 5 (3–6); average date, May 30 (May 12–July 7).

112. **Iridoprocne bicolor.** TREE SWALLOW.—Breeds commonly in Cape May, Cumberland and Atlantic Counties, New Jersey. In Pennsylvania I have found them only about a few ponds in Pike and Monroe Counties and on a pond at Scotia, Center County. Data on nine nests give: average set 5 (4–6); average date, May 28 (May 19–June 16).

113. **Riparia riparia.** BANK SWALLOW.—Very common summer resident in the Delaware Valley in both states and along the Susquehanna Valley in Pennsylvania. I have not found it elsewhere. Data on forty-five nests give: average set, 5 (4–6); average date, May 20 (May 14–June 18).

114. **Stelgidopteryx serripennis.** ROUGHED-WINGED SWALLOW.—Nests commonly in Camden and Burlington Counties, New Jersey; I have also found its nest once in the pine barrens in Gloucester County and once in a sand dune in Cape May County. In Pennsylvania it breeds regularly in the southern half of the state pushing up the river valleys rarely to Stroudsburg, Monroe County, but commonly to Center County, and has even been found breeding at Warren, Warren County. Data on eighteen nests give: average set, 6 or 7 (5); average date, May 20 for southern Pennsylvania and New Jersey; May 27 for northern Pennsylvania.

115. **Bombycilla cedrorum.** CEDAR WAXWING.—I have never found the Waxwing breeding in southern New Jersey. In Pennsylvania it is fairly distributed but only common in the northern counties. Data on fourteen nests give: average set, 4 (5); average date, June 25 (June 5–August 19).

116. **Lanius ludovicianus migrans.** MIGRANT SHRIKE.—A regular

though not common breeder in Erie County, Pennsylvania, but not known elsewhere except as a migrant. Data on two nests are: 1, East Springfield, Pa., May 8, 1915, four eggs; 2, East Springfield, Pa., May 9, 1915, five eggs.

117. *Vireosylva olivacea*. RED-EYED VIREO.—One of the most abundant breeding birds of the woodland. Data on forty-eight nests give: average set, 3 (2-4); average date, June 6 (May 26-June 14).

118. *Vireosylva gilva gilva*. WARBLING VIREO.—In New Jersey I have found this species nesting only along the Delaware from Trenton to Belvidere. In Pennsylvania it is very local except in the northern and mountainous districts, where it is not found at all. Data on five nests give: average set, 3 or 4; average date, Greene County, May 22; Center County, May 28.

119. *Lanivireo flavifrons*. YELLOW-THROATED VIREO.—I have not found this Vireo nesting in southern New Jersey but from Camden north it is a regular breeder. In Pennsylvania it is a rather scarce though regular breeding bird throughout the state, although contrary to the statement in Stone's 'Birds of Eastern Pennsylvania and New Jersey,' I have found it more commonly in the southern portion. Data on eight nests from Philadelphia, Montgomery, Center and Warren Counties give: average set, 4 (sometimes 3); average date, June 4, earliest May 23.

120. *Lanivireo solitarius solitarius*. BLUE-HEADED VIREO.—A regular and fairly common breeder in the northern and mountainous parts of Pennsylvania from Pike and Warren Counties south to Huntington, breeding as near Philadelphia as the Delaware Water Gap. Data on nine nests give: average set, 4 (sometimes 3); average date, June 4 (May 15-July 2).

121. *Vireo griseus griseus*. WHITE-EYED VIREO.—Very common in the Cedar swamps of southern New Jersey but in Pennsylvania I have found it only as a rather scarce breeder in parts of Delaware and Chester Counties. A set of four eggs was taken in Cape May County, May 23, 1908.

122. *Mniotilta varia*. BLACK AND WHITE WARBLER.—Breeds regularly throughout both states but very scarce in southeastern Pennsylvania; most plentiful in the mountains. Data on twelve nests give: average set, 5 (3-4); average date, May 20 (May 14-June 10).

123. *Helmitheros vermivorus*. WORM-EATING WARBLER.—I have never found this species in southern New Jersey. In Pennsylvania it breeds in Chester, Delaware and Bucks Counties and rarely in Philadelphia also in Greene and Alleghany in the western part of the state. It is a Carolinian species but pushes up the valleys to laurel covered hillsides well into the mountains, and I have found it breeding in Huntington and southern Center Counties, in the same ravines with the Canadian and Black-throated Blue Warblers. Data on thirteen nests give: average set, 5 (3-6); average date, for eastern Pennsylvania (5 nests), May 30; for Center County (3 nests), May 26; for Greene County (5 nests), May 25.

124. *Vermivora pinus*. BLUE-WINGED WARBLER.—In southern New Jersey I have found this bird but three times in the breeding season, once

at Bennett and twice at Clementon. In Pennsylvania it breeds commonly in the southeastern counties especially in parts of Bucks, Chester, Delaware, and Montgomery. Data on nineteen nests give: average set, 5 (3-6); average date, May 28 (May 24-June 19).

125. *Vermivora chrysoptera*. GOLDEN-WINGED WARBLER.—I have one summer record for New Jersey, near the Delaware Water Gap. In Pennsylvania it is a regular but very local breeder in Pike, Monroe, Wayne and Huntingdon Counties; also in Greene and Alleghany Counties in the western part of the state. I have found it most common in Stone Valley, Huntingdon County. Data on five nests give: average set, 5 (sometimes 4); average date May 25 (May 22-June 4).

126. *Vermivora rubricapilla rubricapilla*. NASHVILLE WARBLER.—I have found the Nashville Warbler only in two northern bogs at Pocono Lake and Tobyhanna, Monroe County, Pa. Two nests are as follows: 1, Pocono Lake, Pa., June 18, 1907, two eggs; 2, Pocono Lake, Pa., June 27, 1914, four eggs.

127. *Compothlypis americana usneæ*. NORTHERN PARULA WARBLER.—Nests plentifully in parts of Cape May, Atlantic and Cumberland Counties, New Jersey. In Pennsylvania it breeds regularly in Huntingdon County and along the Alleghanies to Monroe and Pike and west to Warren County. Data on five nests give: average set, 4 (sometimes 3); average date for southern New Jersey, (4 nests) May 24; for Pennsylvania (1 nest) Huntingdon Co., June 4.

128. *Dendroica æstiva æstiva*. YELLOW WARBLER.—A common breeder in certain places but locally distributed. Data on twenty-one nests give: average set, 4 (3-5); average date, May 26 (May 18-June 23).

129. *Dendroica caerulescens caerulescens*. BLACK-THROATED BLUE WARBLER.—Regular and common breeder from Huntington to Fayette Counties and north to Pike and Warren covering practically all of the mountainous section of the state. Especially common in Pike and Wayne Counties on the Pocono plateau. Data on 35 nests give: average set, 4 (3-5—very rarely 5); average date, May 30 (May 24-June 23).

130. *Dendroica magnolia*. MAGNOLIA WARBLER.—Common breeder in the higher mountains from Blair north to Warren and Pike Counties, Pa. Scarce south of Blair and Center. Data on eighteen nests give: average set, 4 (3-5); average date, June 4 (May 27-June 20).

131. *Dendroica cerulea*. CERULEAN WARBLER.—I have definite breeding records only from Greene and Alleghany Counties where it is a regular summer resident. Data on four nests from Greene Co., give: average set, 4; average date, May 26 (May 20-June 3).

132. *Dendroica pensylvanica*. CHESTNUT-SIDED WARBLER.—In New Jersey I have found it breeding near the Water Gap and in Pennsylvania it is a common summer resident from Fayette and Franklin Counties northward throughout all the mountainous and northern counties. Data on twenty-one nests give: average set, 4 (3-5); average date, June 1 (May 25-June 18).

133. **Dendroica fusca.** BLACKBURNIAN WARBLER.—Nests in the mountainous regions of Pennsylvania from Huntington County north to Warren and Pike, most common northward. I consider its nest the hardest to find of all our nesting birds. Data on seven nests give: average set, 3 or 4; average date, June 1 (May 26–June 29).

134. **Dendroica virens.** BLACK-THROATED GREEN WARBLER.—Same range as the preceding, though strange as it may appear, it seems to be more common in Fayette and Huntington Counties than farther north where the Canadian element is more predominant. Data on eight nests give: average set, 4 (sometimes 3); average date, June 1 (May 24–July 6).

135. **Dendroica vigorsii.** PINE WARBLER.—Common in summer throughout the pine barrens of southern New Jersey. In Pennsylvania it is a rare or local summer resident in the following counties. Huntington, Mifflin, Center, Lycoming, Snyder, Warren, Wayne, Monroe and Pike. On May 14, 1914, I found a nest almost completed in northern Hunting-ton County.

136. **Dendroica discolor.** PRAIRIE WARBLER.—Breeds abundantly throughout southern New Jersey but I have not found it in summer elsewhere. Data on five nests give: average set, 4 (sometimes 3), average date, May 26.

137. **Seiurus aurocapillus.** OVENBIRD.—Breeds commonly and generally through both states. Data on twenty-two nests give: average set, 4 or 5 (sometimes 3); average date, May 25 (May 16–June 28).

138. **Seiurus noveboracensis noveboracensis.** WATER-THRUSH.—A rare breeder in Warren, Clinton, Sullivan and Cambria Counties and common in the most impenetrable Rhododendron swamps of Wayne, Monroe and Pike Counties on the Pocono plateau. I have never found this bird along running streams but always in the swamps where moss covered logs and standing pools of water abound. The nest is very hard to discover. Data on six nests give average set, 4 (3–5), average date, May 26 (May 20–June 6).

139. **Seiurus motacilla.** LOUISIANA WATER-THRUSH.—A rare breeder in southern New Jersey (see Auk, January 1912, p. 105). In Pennsylvania it is rare in the southeastern counties but common along the lower Susquehanna, in Greene County in the southwest, and in Alleghany County. It is also common along the mountains of Center, Huntington and Mifflin Counties where I have found a number of nests, and over the Pocono plateau in Wayne, Monroe and Pike Counties in the same section inhabited by the other species but unlike it always frequenting the cool swift running mountain streams. Data on thirty nests give: average set, 5 (3–6), average date, May 12 (April 26–June 16).

140. **Oporornis formosa.** KENTUCKY WARBLER.—I have but one record of the Kentucky Warbler summering in southern New Jersey (see Stone's 'Birds of New Jersey'). In Pennsylvania it is a typical Carolinian species restricted to the southeastern and southwestern counties. Data on thirty-two nests give: average set, 5 (3–6); average date, May 25 (May 18–June 22).

141. **Oporornis philadelphia.** MOURNING WARBLER.—Breeds regularly in Warren County and I have found them summering regularly but not commonly on parts of Sullivan, Pike and Monroe Counties. A set of five eggs in my collection was taken in Warren County, June 9, 1911.

142. **Geothlypis trichas trichas.** MARYLAND YELLOW-THROAT.—Breeds commonly throughout; from the coast islands of New Jersey to the tops of the Alleghanies. Data on twenty-one nests give: average set, 4 (3-5); average date, May 28 for first sets, earliest May 19; for second sets, July 5, latest July 17.

143. **Icteria virens virens.** YELLOW-BREASTED CHAT.—A common breeder throughout New Jersey, being abundant in suitable localities in the southern counties. In Pennsylvania it is a common summer resident in the Carolinian fauna of the southern part of the state pushing north into Center County, where however, it is rare. It pushes up into mountain clearings as the forest disappears and I have found it in Pike, Wayne and Sullivan Counties, and in 1917 found a pair breeding on the very summit of Bald Knob, one of the highest mountains in Central Pennsylvania. Data on thirty-eight nests give: average set, 4 (3-5); average date, May 28 (May 20-June 25).

144. **Wilsonia citrina.** HOODED WARBLER.—Breeds commonly in the swamps of southern New Jersey. It is especially common in Cape May and Cumberland Counties and I have found it nesting as near to Philadelphia as Clementon, in 1915. In Pennsylvania it nests commonly in the Rhododendron and Laurel thickets of Franklin, Center, Huntington and Mifflin Counties and less frequently in Snyder and Juniata Counties. I have also found it present in the breeding season though rare, in Clinton, Lycoming and Warren where the fauna is pronouncedly Canadian. Data on twelve nests give: average set, 4 (3-5); average date, for four New Jersey nests, May 24; for eight Pennsylvania nests, June 1.

145. **Wilsonia canadensis.** CANADA WARBLER.—Breeds regularly in the mountains of Pennsylvania from Fayette, Juniata and Huntington Counties to Warren and Pike. Nowhere have I found it more abundant than in northern Huntington and southern Center Counties. Data on fifteen nests give: average set, 5 (sometimes 4); average date, May 27 (May 23-June 25).

146. **Setophaga ruticilla.** REDSTART.—Breeds regularly but not commonly in southern New Jersey from Ocean to Cape May Counties and more commonly from Belvidere northward along the Delaware. In Pennsylvania I have found it nesting along the Pennypack Creek near Philadelphia, where however it is rare. In the southeastern and southwestern sections it is rare and local and very scarce in the central parts of the state. In the northeast—Wayne, Monroe and Pike Counties—it is more plentiful but local as it is also in Warren County. Data on nine nests give: average set, 4 (3-5); average date, May 30 (May 24-June 19).

147. **Mimus polyglottos polyglottos.** MOCKINGBIRD.—On May 9, 1914, I saw a Mockingbird near Waynesburg, Greene County, Pa., and was



told by an old collector that they had bred on his farm for several years and that he had found their nests. I have not found them nesting anywhere in Pennsylvania or New Jersey.

148. **Dumetella carolinensis.** CATBIRD.—An abundant summer resident throughout both states, but less numerous in the mountainous counties of Pennsylvania. Data on 110 nests give average set, 4 (3-5); average date, June 1 (May 22-July 10).

149. **Toxostoma rufum.** BROWN THRASHER.—Common in the lower parts of both states but less abundant or rare in the mountainous sections. Data on thirty-two nests give: average set, 4 (3-5); average date, May 12 (May 4-June 21).

150. **Thryothorus ludovicianus ludovicianus.** CAROLINA WREN.—Breeds commonly from Burlington and Camden Counties south to Cape May, New Jersey, and less frequently up the Delaware River to Frenchtown. In Pennsylvania I have found it as a summer resident in the following counties: Chester, Delaware, Philadelphia, Montgomery, Bucks, Lancaster, York, Dauphin, Cumberland, Perry (rare), Greene and Washington. Data on thirteen nests give: average set, 5 (4-6); average date, April 15 (April 5-June 18).

151. **Thryomanes bewicki bewicki.** BEWICK'S WREN.—Breeds fairly commonly in Greene County, Pennsylvania, where I have found several nests. It is also a regular though rare breeding bird in Center County, where at least one pair nests every year. In Huntington County it nests rarely. Two sets of eggs in my collection from Waynesburg, Greene County, were taken on May 6, 1911 (6 eggs), and May 10, 1914 (7 eggs).

152. **Troglodytes aëdon aëdon.** HOUSE WREN.—Common summer resident in southern New Jersey and in Pennsylvania east of the Alleghanies. West of the mountains it seems to be more local and in Greene County is largely replaced by the previous species. Data on forty-seven nests give: average set, 6 or 7 (5-8); average date, May 28 (May 22-July 29).

153. **Nannus hiemalis hiemalis.** WINTER WREN.—I have found this species summering in the following counties: Warren, Clinton, Sullivan, Pike, Monroe and Wayne, but have found more of the sham nests than the occupied ones. Data on three nests give: average set, 4 or 5; average date, May 20.

154. **Cistothorus stellaris.** SHORT-BILLED MARSH WREN.—One of my most interesting New Jersey records is of a colony of these birds nesting on the salt marsh in lower Burlington County. They inhabited the thick marsh grass, not the cattails or higher growth, and nest in the grass close to the ground. Two sets of eggs in my collection were taken August 4, 1913, and consist of four and five eggs respectively. Another nest found on the same day contained five young birds. These were evidently a second nesting. In Pennsylvania I have noted the Short-billed Marsh Wren in Center County as late as May 30 but have no evidence of its nesting.

155. *Telmatodytes palustris palustris*. LONG-BILLED MARSH WREN.—Nests commonly all along the New Jersey coast marshes from Jersey City to Cape May, and along the Delaware River north to Trenton, N. J., and Bucks County, Pa. Data on 196 nests give: average set, 5 (3-7); average date, June 4 (May 26-July 18).

156. *Certhia familiaris americana*. BROWN CREEPER.—I have found this bird in summer in Sullivan and Warren occasionally, but have never found its nest. It has however been taken both in the mountains of Pennsylvania and New Jersey by others.

157. *Sitta carolinensis carolinensis*. WHITE-BREASTED NUTHATCH.—A regular but not common breeder in southern New Jersey and southeastern Pennsylvania and more common throughout the rest of the latter state. Very common in Center County. Data on fourteen nests, all but two from Center Co., give: average set, 7 or 8 (5-9); average date, April 28 (April 22-May 19).

158. *Sitta canadensis*. RED-BREASTED NUTHATCH.—I have met with this bird in summer only uncommonly in Warren and Sullivan Counties, and have not found its nest although they have been found in the latter county by others. In 1917 the birds remained in Pike County until June 9 but none bred.

159. *Bæolophus bicolor*. TUFTED TITMOUSE.—Nests fairly commonly in southern New Jersey and in southeastern and southwestern Pennsylvania within the limits of the Carolinian fauna. I have also found it rarely in summer in the river valleys in Pike and Center Counties. Two nests that I have found are as follows: 1, Philadelphia, Pa., May 25, 1906, six hatching eggs and one young; 2, Tinicum, Delaware County, Pa., May 10, 1907, six eggs.

160. *Penthestes atricapillus atricapillus*. BLACK-CAPPED CHICKADEE.—A regular breeder in the mountainous parts of Pennsylvania from Fayette and Huntington Counties north to Warren and Pike. Data on seven nests give: average set, 7 (5-8); average date, May 10 (May 4-June 10).

161. *Penthestes carolinensis carolinensis*. CAROLINA CHICKADEE.—I have found this species breeding commonly in southern New Jersey from Burlington County south and in Greene County in southwestern Pennsylvania. Data on ten nests give: average set, 7 (5-8); average date, New Jersey (four nests) May 15; Pennsylvania (six nests) May 9.

162. *Regulus satrapa satrapa*. GOLDEN-CROWNED KINGLET.—A rare summer resident of Pike County and rather more common in Monroe but I have never found its nest.

163. *Polioptilla cærulea cærulea*. BLUE-GRAY GNATCATCHER.—I have found this bird to be a very common summer resident of Greene, Washington and Alleghany Counties in southwestern Pennsylvania. Data on thirty-six nests give: average set, 5 (sometimes 4); average date, May 14 (May 7-May 25).

164. *Hylocichla mustelina*. WOOD THRUSH.—Breeds commonly

throughout New Jersey and Pennsylvania but becomes local in the northern mountainous portion of the latter state. Data on eighty-four nests give: average set, 4 (3-5); average date, New Jersey (twelve nests) May 22; southern Pennsylvania (sixty-two nests) May 26; northern Pennsylvania (ten nests), June 2.

165. *Hylocichla fuscescens fuscescens*. VEERY.—I have found the Veery breeding regularly in Sullivan, Wyoming, Pike, Wayne and Monroe Counties, Pennsylvania, while west of the Alleghanies it is much more abundant and I have summer records from the following counties: Bedford, Fayette, Clarion, Blair, Venango, Warren and Erie. I have had no experience in northern New Jersey where it also nests. Data on five nests give: average set 4 (sometimes 3); average date, June 1 (May 26-June 29).

166. *Hylocichla ustulata swainsonii*. OLIVE-BACKED THRUSH.—I have found this thrush summering in Warren, Pike, and Monroe Counties, Pennsylvania. A set of four eggs from the last county taken, June 8, 1910, is in my collection.

167. *Hylocichla guttata pallasii*. HERMIT THRUSH.—I have found the Hermit in summer in Warren, Monroe, Sullivan, Pike and Wayne Counties, Pennsylvania. Data on five nests give: average set, 4 (sometimes 3); average date, June 10 (May 30-June 23).

168. *Planesticus migratorius migratorius*. ROBIN.—Breeds abundantly throughout both states. Data on 346 nests give: average set, 4 (2-5); average date, for first sets April 20 (earliest, April 18); for second sets May 25; third sets July 4. In fixing dates for later sets four pairs were studied which raised three broods annually on porches near my home at State College, for three years in succession.

169. *Sialia sialis sialis*. BLUEBIRD.—Breeds commonly throughout both states, being least abundant in the neighborhood of Philadelphia and in the wilder, northern mountainous section. Data on sixty-nine nests give: average set, 5 (4-6); average date, for first sets, April 15, earliest, April 4; for second sets, June 25, latest, August 2.

THE BIRDS OF WALLA WALLA AND COLUMBIA  
COUNTIES, SOUTHEASTERN WASHINGTON.

BY LEE RAYMOND DICE.

(Continued from p. 51.)

**Otocoris alpestris arctica.** PALLID HORNED LARK.—S. H. Lyman reports a specimen of this form taken near Walla Walla during the first part of March a few years ago.

**Otocoris alpestris merrilli.** DUSKY HORNED LARK.—The most abundant bird of the bunch-grass habitat throughout southeastern Washington. In early June, 1914, numbers of adults and nearly grown young were seen on the bunch-grass hills near Wallula and Nine-mile. They were especially numerous on wind swept ridges. In the grain fields and bunch-grass areas of eastern Walla Walla County they are abundant throughout the year. Although they often come very near timber in the valleys, they are never found among trees.

On April 10, 1905, a young Horned Lark, just able to fly, was seen in the hills near Prescott. On April 18 a nest containing a full set of three eggs was found. On April 12, 1906, a nest with three partly feathered birds was seen. This nest was deserted on the 22nd. On March 27, 1908, one nest of three eggs and another with two eggs were found in a stubble-field. All of these nests were composed of dried grasses and weed leaves, and the rim of the nest was flush with the level of the ground. Each nest was in such a position that it was partially concealed by a clump of stubble or of weeds. On April 7, 1908, a young bird fully feathered and able to fly was seen.

Horned Larks often follow the plows and other farm implements to pick up the insects, larvæ, and seeds which are exposed when the ground is stirred up. The Horned Lark is one of the few birds that the advance of agriculture has not reduced in number. Most of the other prairie birds find difficulty in rearing broods, because the spring plowing practiced in the region destroys the nests, but many young of the Horned Lark are able to fly before plowing is well under way.

**Pica pica hudsonia.** MAGPIE.—A few were seen in early June, 1914 in the willows along the Walla Walla River east of Wallula, and some were observed in the sage-brush about a half-mile from the river. In the prairie area of Walla Walla and Columbia counties they are abundant in the timber along the streams throughout the year. They also wander long distances out into the bunch-grass hills.

**Cyanocitta stelleri annectens.** BLACK-HEADED JAY.—Reported in winter at Walla Walla (Bendire, 1895, 370). Abundant near Prescott some winters, but they do not appear every year. In late July, 1914, a

number of small flocks were seen in lowland fir forest near Hompeg Falls. On Aug. 3 one was seen in heavy Douglas spruce forest on top of a ridge near Twin Buttes R. S.

**Perisoreus canadensis capitalis.** ROCKY MOUNTAIN JAY.—S. H. Lyman has observed this jay a number of times in the Blue Mountains at an altitude of 4000 feet or more, and has taken several specimens.

**Corvus corax sinuatus.** MEXICAN RAVEN.—Reported by Dawson and Bolles (1909, 5-9) from near Wallula and from the Blue Mountains.

**Corvus brachyrhynchos hesperis.** WESTERN CROW.—A few were seen June 14, 1914 in willows near Wallula. Dawson (1914, 57) reports their presence near Wallula on May 3, 1907. On June 9, 1914, numbers were seen along the Touchet River several miles below Lamar. They are of occasional occurrence in the timber along the Touchet River near Prescott. Fairly large flocks have been seen in late summer and early fall in yellow pine forests, and in lowland fir and deciduous forests in the Blue Mountains.

**Nucifraga columbiana.** CLARK'S NUTCRACKER.—On July 28, 1914 several were seen in alpine fir forest on a ridge of the Blue Mountains.

**Molothrus ater artemisiæ.**<sup>1</sup> NEVADA COWBIRD.—On June 16, 1914 a few were noted in the willows along the Walla Walla River near Wallula. A number occur in summer near Prescott. They are most numerous in the timber along the Touchet River and in meadows, but wander a considerable distance into the open fields.

**Xanthocephalus xanthocephalus.** YELLOW-HEADED BLACKBIRD.—In 1914, several people reported the occurrence of this species about small swamps near Attalia and Wallula. They are also reported to have been seen near Waitsburg and Dayton in company with Red-wings.

**Agelaius phoeniceus neutralis.** SAN DIEGO RED-WING.—Several were seen near Nine-mile in early June, 1914, about small cat-tail swamps caused by seepage from irrigation ditches. A few are found in summer at the edges of streams in the Touchet Valley near Prescott. They often feed on the meadows or in open brush not far from water.

Bendire reported Red-wings as regular winter residents at Walla Walla (Allen, 1881, 128), but they have not been observed near Prescott in winter. Spring arrival dates at Prescott are: March 8, 1905; April 3, 1906; March 2, 1908; and March 23, 1913.

**Sturnella neglecta.** WESTERN MEADOWLARK.—Numerous in early June, 1914, on the bunch-grass hills near Wallula and Nine-mile. They occurred also in the sage-brush of the lower country near these places, but were much less numerous than in the bunch-grass. In the prairie area Meadowlarks are common throughout the year. They are characteristically prairie birds and do not go into thick brush, although they sometimes alight in the tops of tall trees or feed on the ground in open timber.

June 24, 1909, a nest with four eggs was found in a meadow two miles

<sup>1</sup> Griannell, 1909, Univ. Calif. Publ. Zool., Vol. 5, p. 276.



east of Prescott. Another nest containing five eggs was found near the same place on June 5, 1913. In a third nest six blind nestlings were found July 7, 1915. A young bird able to fly was seen on May 9, 1913.

**Icterus bullocki.** BULLOCK'S ORIOLE.—A few were seen in early June, 1914 in the willows along the Walla Walla River near Wallula, and one was noted in sage-brush a short distance from the river. Near Prescott they are common in summer wherever trees are found. They may also be seen occasionally on fences in the bunch-grass hills a mile or more from timber. At Lyon's Ferry several were seen in late June, 1914, in shade and orchard trees.

Spring arrival dates at Prescott are May 11, 1908; and May 14, 1913. In 1915 they were still numerous on Aug. 8. They nest commonly in the higher trees along the Touchet River. A male accompanied by several fledglings was seen July 10, 1915.

**Euphagus cyanocephalus.** BREWER'S BLACKBIRD.—Common in early June, 1914 in the willows east of Wallula. These birds commonly fed in the sage-brush within a half mile of the river. They are numerous in summer near Prescott. During the breeding season they are rather closely restricted to the vicinity of brush and swampy places, where they nest, but at other times they wander far out into the bunch-grass hills. They often follow plows or other farm implements to pick up insects.

Bendire (1895, 493) reported them a regular winter resident at Walla Walla, but there is no record of them in winter near Prescott. Spring arrival dates at Prescott are: April 24, 1905; and April 6, 1908. The first arrivals appear in flocks of ten to twenty-five individuals. In 1915 they were still numerous on Aug. 8.

**Hesperiphona vespertina brooksi.**<sup>1</sup> BRITISH COLUMBIA EVENING GROSBEAK.—Irregularly present in winter in the timber along the Touchet River near Prescott. In the winter of 1904-05 they were numerous in large flocks. In that year they were last noted on April 19. In 1915 they first appeared on Nov. 22. A few were reported at Walla Walla between April 5 and 10, 1885 (Belding, 1890, 130). S. H. Lyman states that they are numerous in summer in the Blue Mountains, and that young birds have been seen in September beside the Touchet River at Dayton.

In winter at Prescott they commonly feed on sumac seeds, and have no difficulty in cracking these hard seeds in their bills.

**Acanthis linaria linaria.** REDPOLL.—Several specimens at Whitman College were taken by S. H. Lyman in Columbia County.

**Astragalinus tristis pallidus.** PALE GOLDFINCH.—One was taken June 15, 1914, in sage-brush not far from the Walla Walla River east of Wallula. Near Prescott Goldfinches are common in winter, but are rare in summer. They occur at Walla Walla in winter (Belding, 1890, 136). One was seen at Lyon's Ferry on June 23, 1914. In summer they are

<sup>1</sup> Grinnell, Condor, January, 1917, p. 20.

closely restricted to the neighborhood of trees and brush, but in winter they wander a mile or more out into the bunch-grass.

A male was seen feeding a fledgling near Prescott on July 11, 1910.

***Spinus pinus pinus*.** PINE SISKIN.—In the winter of 1904-05 Pine Siskins were numerous in small flocks in the trees and brush along the Touchet River near Prescott. They fed extensively on the seeds of the alder. None were observed later than March 5. They have been noted in early spring at Walla Walla (Belding, 1890, 139). A specimen from Walla Walla in the Whitman College collection was taken March 28, 1905. During July and August, 1914 several individuals were seen at the edge of the deciduous growth in the bottom of the canyon above Hompeg Falls. Others were seen on the ridges in Douglas spruce forest, in thick brush, and in open alpine fir forest, being most numerous in the latter.

***Passer domesticus hostilis*.**<sup>1</sup> ENGLISH SPARROW.—A small flock was noted at Prescott in February, 1908. This must have been about the date of their first arrival, although they had reached Walla Walla several years previously. They have now begun to spread out into the country, and a few have been noted around farm houses in the Touchet Valley.

***Poœcetes gramineus confinis*.** WESTERN VESPER SPARROW.—A specimen in the collection of Whitman College was taken at Walla Walla on April 20, 1904.

***Passerculus sandwichensis alaudinus*.** WESTERN SAVANNAH SPARROW.—Abundant on September 16, 1909, in the bunch-grass and stubble-field hills near Prescott. In 1915 they first appeared on Aug. 28 and were common in the fields until Sept. 28. A few were seen in open timber.

***Ammodramus savannarum bimaculatus*.** WESTERN GRASSHOPPER SPARROW.—Rare in the region near Prescott and not reported from any other part of the state (Dice, 1910, 217). A few were seen in June, 1908; June, 1910; and May, 1914. They were all seen at the edge of a wheat field along the base of a bunch-grass hill bordering the Touchet Valley two miles southeast of Prescott.

***Chondestes grammacus strigatus*.** WESTERN LARK SPARROW.—In June, 1914 a number were seen in the sage-brush near Wallula, being often found a mile or more from any other kind of habitat. On the bunch-grass hills near Wallula and Nine-mile they were abundant. They are reported from Walla Walla (Belding, 1890, 148). Near Prescott they are common in summer in the open parts of the valley. They do not go among trees, although they often reach the edge of brush and are found around barns. A number were seen at Lyon's Ferry in June, 1914.

***Zonotrichia leucophrys gambeli*.** GAMBEL'S SPARROW.—The type locality is Wallula (Nuttall, 1840, 556). During the spring and fall migrations they are common in small flocks in the timber and brush along the Touchet River near Prescott. In 1908 they first appeared on April 5 and were still numerous on April 28. In 1913 they were first noted on April 25

<sup>1</sup> Oberholser, Auk, 1917, p. 329.

and were still present on May 15. In 1915 they first appeared in the fall on Sept. 2, and left before Oct. 10. They were present in 1909 on Sept. 17. Bendire reported them a regular winter resident at Walla Walla (Allen, 1881, 128). A number remained throughout the winter of 1907-08 near Prescott, but in other years none remained in that region. At Walla Walla they are reported a not very common summer resident (Belding, 1890, 151). As they are not known to breed in Washington this statement may be questioned.

***Spizella monticola ochracea*.** WESTERN TREE SPARROW.—Type from Walla Walla (Brewster, 1882, 228). During the winter of 1907-08 a few flocks lived for a time in the brush and trees along the Touchet River near Prescott.

***Spizella passerina arizonæ*.** WESTERN CHIPPING SPARROW.—Abundant in summer along the Touchet River near Prescott. They prefer partially open timber or brush, but wander out into fields a half-mile or more. In the summer of 1914 they were found commonly in all of the forest and brush habitats of the Blue Mountains, from the bottoms of the canyons to the tops of the ridges, but were most numerous in brush and semi-open places on the ridges. Here large flocks of old and young were abundant in early August.

Spring arrival dates at Prescott are: April 25, 1905; May 3, 1908; and April 18, 1913. In 1915 they were last noted on Sept. 24.

They nest commonly in the trees and brush near Prescott. A freshly completed nest was found on May 8, 1908. Young able to fly were seen on June 10, 1908. A nest with nearly fledged young was found July 4, 1910. On June 26, 1914, from another nest four young flew away when approached. On July 6, 1914 an adult was seen feeding a juvenile cowbird.

***Spizella breweri*.** BREWER'S SPARROW.—Several juveniles were shot on the bunch-grass hills southeast of Wallula in early June, 1914. Adults and young were numerous in flocks in the bunch-grass on the hills north of the Walla Walla River at Nine-mile. In late June a number were seen and one specimen collected in the bunch-grass hills near Snake River on the road between Prescott and Lyon's Ferry.

***Junco hyemalis shufeldti*.** SHUFELDT'S JUNCO.—Abundant in winter in the timber along the Touchet River near Prescott. They first appeared in 1915 on Sept. 4, and were abundant by Sept. 11. In 1905 they were not seen later in the spring than May 1. In 1913 they were still present on April 13. In the summer of 1914 they were common everywhere in the Blue Mountains from the bottoms of the canyons to the tops of the ridges, but seemed to be most abundant in buck-brush on the ridges.

***Amphispiza nevadensis nevadensis*.** SAGE SPARROW.—Reported by Snodgrass (1904, 231) to prevail everywhere in the western part of Walla Walla County. In 1914 none were observed near Wallula, but they were numerous in flocks in the bunch-grass and grain fields of the Lower Flat north of Nine-mile. One nearly grown individual was taken June 17.

**Melospiza melodia merrilli.** MERRILL'S SONG SPARROW.—A number were seen in early June, 1914, in the willows along the Walla Walla River near Wallula. At Prescott they are abundant throughout the year in the timber and brush along the Touchet River. Several flocks of young accompanied by parents were seen in the first week of August, 1914, in the brush along Butte Creek.

A nest found two miles east of Prescott on July 13, 1915, contained two well-feathered young. The nest was placed three feet above the ground in an arbor vitæ (not native) and was loosely woven of weeds and grasses, some of which had been picked green.

**Passerella iliaca schistacea.** SLATE-COLORED FOX SPARROW.—Rare in summer in the thickest brush along the Touchet River near Prescott. On Aug. 2, 1914, one was seen in low brush in a western larch forest on the top of a ridge near Twin Buttes R. S. Another was seen on August 6 in brush along Butte Creek.

Spring arrival dates at Prescott are: March 11, 1905; April 3, 1906; and April 14, 1908.

**Pipilo maculatus curtatus.**<sup>1</sup> NEVADA TOWHEE.—A few occur in winter in the brush and timber along the Touchet River near Prescott. Bendire took specimens at Walla Walla (Brewster, 1882, 227).

**Zamelodia melanocephala.** BLACK-HEADED GROSBEEK.—Several were seen in early June, 1914, in the willows along the Walla Walla River near Wallula. Near Prescott a few spend the summer along the Touchet River. They seem to prefer partially open timber and may often be seen in orchard trees. In 1915 they were last seen on Aug. 25. They breed at Walla Walla (Belding, 1890, 177).

**Passerina amoena.** LAZULI BUNTING.—A few were seen early in June, 1914, at the edge of the willows along the Walla Walla River near Wallula. They are common in the cottonwoods and willows along the Touchet River at Prescott. At Walla Walla they are a common summer resident (Belding, 1890, 179).

Spring arrival dates at Prescott are May 8, 1908, and April 6, 1913. In 1915 they were last noted on Sept. 13.

**Piranga ludoviciana.** WESTERN TANAGER.—Rare in summer in the timber along the Touchet River near Prescott. During July and August, 1914, one was seen in yellow pine forest on a low ridge of the Blue Mountains; they were common in lowland fir forest near Hompeg Falls; one was seen in western larch forest nearby; and several were noted in deciduous timber beside Butte Creek.

Spring arrival dates at Prescott are: May 19, 1906; May 24, 1908; and May 14, 1913.

**Petrochelidon lunifrons lunifrons.** CLIFF SWALLOW.—Nesting in great numbers on the rock cliffs overlooking Snake River at Lyon's Ferry. On June 23, 1914, many of the young at this place were nearly full fledged.

<sup>1</sup>Grinnell, Univ. Cal. Publ. Zool., VII, 309-311, 1911.

A few nest in barns and other buildings in the Touchet Valley near Prescott. A number of nests were observed on June 17 in a road tunnel under the railroad tracks near Lamar.

***Hirundo erythrogastra.*** BARN SWALLOW.—One nest was seen on June 9, 1914, in a barn near the Walla Walla River at Nine-mile. A few also nest in barns near Prescott. Reported to be common at Walla Walla in summer (Belding, 1890, 188).

***Tachycineta thalassina lepid.*** NORTHERN VIOLET-GREEN SWALLOW.—In June, 1914, a number were seen near Wallula, flying over sagebrush and over the meadows near the Walla Walla River. One was observed drinking from the river while on the wing. A few feed over meadows in the Touchet Valley near Prescott. In 1908 they first appeared near Prescott on April 2.

***Riparia riparia.*** BANK SWALLOW.—A few occur along the Touchet River at Prescott. A nest hole was noted May 19, 1914, in a soft dirt bank. S. H. Lyman reports their occurrence at Dayton.

***Stelgidopteryx serripennis.*** ROUGH-WINGED SWALLOW.—Numerous in summer over the fields of the valleys near Prescott. They are quite often seen to perch in bushes or trees at the edge of the timber or on fences or telephone lines. One was taken on May 26, 1914. Reported from Walla Walla (Belding, 1890, 194).

***Bombycilla garrula.*** BOHEMIAN WAXWING.—A flock of 150 was seen in the timber near Prescott on Dec. 25, 1908, and a smaller flock noted Feb. 26, 1905. S. H. Lyman reports that they occur commonly at Dayton. Bendire took specimens at Walla Walla (Brewster, 1882, 227).

***Bombycilla cedrorum.*** CEDAR WAXWING.—A small flock was seen in timber near Prescott on April 15, 1908. Several individuals were seen in cherry trees on June 13. Bendire took specimens at Walla Walla (Brewster, 1882, 227). S. H. Lyman reports that they breed in the Blue Mountains.

***Lanius borealis.*** NORTHERN SHRIKE.—Bendire took specimens at Walla Walla (Brewster, 1882, 227). One was seen in a field of the Touchet Valley near Prescott on Nov. 16, 1915. S. H. Lyman states that they are not uncommon in the region in winter.

***Lanius ludovicianus excubitorides.*** WHITE-RUMPED SHRIKE.—Numerous during June, 1914, in the sage-brush east of Wallula. A few lived near farm buildings. Several were seen in the bunch-grass near the tops of the hills north of Nine-mile. They were common in the bunch-grass and grain fields of Eureka Flat.

***Vireosylva olivacea.*** RED-EYED VIREO.—Reported not very rare at Walla Walla (Belding, 1890, 199). Snodgrass (1904, 232) found them along the Touchet River in eastern Walla Walla County. S. H. Lyman reports that they occur in the Blue Mountains.

***Vireosylva gilva swainsoni.*** WESTERN WARBLING VIREO.—Common in summer in the timber along the Touchet River near Prescott. In 1913 the first arrival was noted April 26.



**Lanivireo solitarius cassini.** CASSIN'S VIREO.—S. H. Lyman reports them to be common in the Blue Mountains in summer. A specimen in the Whitman College collection was taken there Sept. 9, 1900.

**Vermivora rubricapilla gutturalis.** CALAVERAS WARBLER.—Dawson and Bolles (1909, 176) report the appearance of this species at Wallula on April 23, 1905.

**Dendroica aestiva aestiva.** EASTERN YELLOW WARBLER.—Several were seen in early June, 1914 in the willows along the Walla Walla River east of Wallula. They are common in summer in the trees and brush along the Touchet River at Prescott. One was seen June 24, 1914, in some locust trees planted beside Snake River at Lyon's Ferry. They are common in summer at Walla Walla (Belding, 1890, 209).

Spring arrival dates at Prescott are: May 19, 1906; May 18, 1908; and May 14, 1913.

**Dendroica auduboni auduboni.** AUDUBON'S WARBLER.—Common during migration in the trees along the Touchet River at Prescott. In 1913 they were first noted on April 19. In 1915 fall migrants appeared on Sept. 3.

**Dendroica townsendi.** TOWNSEND'S WARBLER.—A juvenile was seen in an orchard near Prescott on Aug. 8, 1915. A female was collected on July 23, 1914, from some bushes in the canyon near Hompeg Falls.

**Seiurus noveboracensis notabilis.** GRINNELL'S WATER-THRUSH.—One was seen Sept. 11, 1915, in some shrubbery near the Touchet River two miles east of Prescott. The bird was seen at close range and carefully studied.

**Oporornis tolmiei.** MACGILLIVRAY'S WARBLER.—Numerous in summer in the timber along the Touchet River at Prescott. They feed mostly on the ground or in very low bushes, but the males go higher to sing. A female was taken Aug. 7, 1914, in thick brush beside Butte Creek in the Blue Mountains. They were present at Prescott as late as Sept. 3 in 1905, and in 1915 one was seen Sept. 9.

**Geothlypis trichas occidentalis.** WESTERN YELLOW-THROAT.—Occasional in summer in thick brush along the Touchet River at Prescott. Reported common in summer at Walla Walla (Belding, 1890, 218). In 1906 males first appeared at Prescott on May 13.

**Icteria virens longicauda.** LONG-TAILED CHAT.—Several were seen in the willows along the Walla Walla River near Wallula on June 16, 1914. Near Prescott a number spend the summer in the timber along the Touchet River. They are reported from Walla Walla (Belding, 1890, 265).

**Wilsonia pusilla pileolata.** PILEOLATED WARBLER.—A few were seen May 18, 1913, in trees along the Touchet River east of Prescott. In 1915 fall migrants appeared Aug. 22, and were common until Sept. 13.

**Setophaga ruticilla.** REDSTART.—Several were seen during June, 1908 in the timber along the Touchet River two miles east of Prescott. A nest was begun in a pear tree by a female about June 15 and was later

finished, but no eggs were ever laid in it. Bendire shot an adult male near Walla Walla (Brewer, 1880, 50).

***Anthus rubescens*.** PIPIT.—Abundant in flocks on the prairie hills near Prescott during migrations. Reported at Walla Walla (Belding, 1890, 265). A spring record at Prescott is April 29, 1908. In 1909 they were noted on Sept. 16. In 1915 they were first noted on Sept. 25 and were present until Nov. 7.

***Cinclus mexicanus unicolor*.** DIPPER.—Numerous along the streams in the Blue Mountains. In the last week of July, 1914, a number were observed on the North Fork of the Touchet River near Hompeg Falls, and in the first week of August many were seen along Butte Creek.

***Dumetella carolinensis*.** CATBIRD.—Several were seen in early June, 1914 in the willows along the Walla Walla River east of Wallula. They are common in summer in the thick brush along the Touchet River near Prescott, and are sometimes found in orchards. Reported rare at Walla Walla in 1885 (Belding, 1890, 226).

Spring arrival dates at Prescott are: May 31, 1908; and May 24, 1914. In 1915 they were still present on Aug. 31.

***Salpinctes obsoletus obsoletus*.** ROCK WREN.—Numerous in early June, 1914, on a rocky hillside southeast of Wallula. Several, including a fledgling just able to fly, were seen June 16 in a little ravine in the bunch-grass of a nearby hillside. In late June, 1914, they were numerous about the rock cliffs and slopes near Lyon's Ferry, and a few were seen in the adjacent bunch-grass. On Sept. 16, 1909, one was collected from a fence on a hill southeast of Prescott. In late July, 1914, several were seen about rock exposures on the sides of the canyon near Hompeg Falls.

***Troglodytes aëdon parkmani*.** WESTERN HOUSE WREN.—A number spend the summer in the timber along the Touchet River near Prescott. Spring arrival dates are: May 3, 1905; April 9, 1909; and April 21, 1913. In 1915 they were last noted on Aug. 25.

Nests were found May 13, 1906, and June 18, 1913, both in holes in decaying limbs of cherry trees. Another nest on a sill in a farm building held six naked young on July 1, 1915.

***Nannus hiemalis pacificus*.** WESTERN WINTER WREN.—Common during late July, 1914, in the lowland fir forest at Hompeg Falls. One was seen on July 29 in damp Douglas spruce forest near the top of the ridge at Twin Buttes R. S. In 1915 migrants appeared near Prescott on Sept. 8, and the species was last seen on Oct. 13.

***Telmatodytes palustris plesius*.** WESTERN MARSH WREN.—Reported from Walla Walla by Oberholser (1897, 189). One was seen Aug. 5, 1914, in the brush at the edge of a small beaver-dam swamp beside Butte Creek.

***Certhia familiaris montana*.** ROCKY MOUNTAIN CREEPER.—A number were present during December, 1908 in the trees along the Touchet River east of Prescott. In the winter of 1915 they first appeared on Dec. 11. A female and a flock of young were seen July 26, 1914, in lowland fir

timber near Hompeg Falls. The female had the tail feathers worn down to stubs not over three-fourths of an inch in length.

***Sitta carolinensis aculeata.*** SLENDER-BILLED NUTHATCH.—One was seen Aug. 7, 1913, in a cherry orchard east of Prescott. A specimen from the Blue Mountains is in the Whitman College collection.

***Sitta canadensis.*** RED-BREASTED NUTHATCH.—Occasional, except perhaps in summer, in the timber along the Touchet River near Prescott. In 1908 they were still at Prescott on June 20, and in 1915 the first was seen Sept. 5. In late July and early August, 1914, numbers were noted on the ridges of the Blue Mountains. They were numerous in western larch and in Douglas spruce, and one was seen in alpine fir forest.

***Sitta pygmaea pygmaea.*** PYGMY NUTHATCH.—Reported common in the forests of the Blue Mountains in Columbia County by S. H. Lyman, who has examined two or three nests.

***Penthestes atricapillus septentrionalis.*** LONG-TAILED CHICKADEE.—Several were seen in the willows along the Walla Walla River east of Wallula in early June, 1914. At Prescott they are a common resident in the timber along the Touchet River. In late July, 1914, they were common in lowland fir forest near Hompeg Falls. One flock was seen on Aug. 5 in the brush beside Butte Creek.

Nests in process of construction have been found near Prescott on April 7, 1906; April 9, 1906; April 9, 1913; and April 10, 1913. In each case the nest was excavated in the decayed wood of orchard or shade trees. In early June, 1908 several flocks of nearly fledged young accompanied by both parents were seen.

The process of nest excavation was watched for a short time on April 10, 1914. This nest was being excavated in the rotten heart of a pear tree, and entrance was obtained through the end of a stub about four feet from the ground. The male and female took part equally in the work, and the labors were continued throughout the day. A vigorous pecking could be heard while either bird was at work. The excavated material was carried in the bill a distance of ten yards or more from the nest before being dropped. It was not dropped in the same place each time, but was scattered over a wide area. Usually the birds alighted on some branch before dropping the debris, but sometimes it was dropped while the bird was flying. As soon as one bird left the hole the other entered immediately. Sometimes the bird outside had to wait a short time. Between 12 M. and 1 P. M. the average time each bird spent in the nest hole was thirty seconds and the shortest time four seconds.

***Penthestes gambeli gambeli.*** MOUNTAIN CHICKADEE.—In the winter of 1905-06 several flocks lived in the trees along the Touchet River east of Prescott. They did not associate with the long-tailed chickadees, but the two species fought when they met. In the summer of 1914 several were seen on the high ridges of the Blue Mountains in alpine fir forest, in western larch forest, and in Douglas spruce forest. Some were seen in yellow pine and in Douglas spruce forests on the low ridges near Hompeg Falls, but none were observed in the canyons.

***Penthestes rufescens rufescens*.** CHESTNUT-BACKED CHICKADEE.—During the winter of 1905-06 several were seen in the timber along the Touchet River east of Prescott. Often they were associated with flocks of long-tailed chickadees. On July 23, 1914, one was seen with a flock of Long-tailed Chickadees in lowland fir forest near Hompeg Falls.

***Regulus satrapa olivaceus*.** WESTERN GOLDEN-CROWNED KINGLET.—Numerous in the fall at Prescott, arriving on Sept. 13, in 1905, and on Sept. 9 in 1915. In 1906 a flock was seen on Dec. 26. In late July, 1914, flocks of young accompanied by parents were numerous in lowland fir forest near Hompeg Falls, and a few were seen in Douglas spruce forest on the mountain slopes. Others were observed in alpine fir forest on the higher ridges.

***Regulus calendula calendula*.** RUBY-CROWNED KINGLET.—Numerous in winter in the timber along the Touchet River at Prescott. Individuals are often associated with flocks of long-tailed chickadees. In 1908 they were still present on April 12. In 1913 they were numerous and in song on April 18. In 1915 the first fall arrival appeared Sept. 6.

***Myadestes townsendi*.** TOWNSEND'S SOLITAIRE.—A number remained throughout the winters of 1904-05 and 1905-06 in the timber along the Touchet River east of Prescott. In 1905 they were last seen on April 5. At the edge of Douglas spruce forest on a low slope near Hompeg Falls several were seen on July 23, 1914. One of these was carrying food in its bill. One was seen in open alpine fir forest on the ridge near Twin Buttes R. S. on July 31.

***Hylocichla ustulata swainsoni*.** OLIVE-BACKED THRUSH.—Reported from Walla Walla (Belding, 1890, 253). Noted in lowland fir forest near Hompeg Falls in late July, 1914.

***Hylocichla guttata* subsp.** HERMIT THRUSH.—Reported common in summer at Walla Walla (Belding, 1890, 254). S. H. Lyman reports them quite common in the Blue Mountains. One was seen among shrubs near the Touchet River east of Prescott on Sept. 11, 1915.

***Planesticus migratorius propinquus*.** WESTERN ROBIN.—In early June, 1914, a number were seen in the willows along the Walla Walla River east of Wallula. In the prairie area of Walla Walla and Columbia counties they are abundant in summer in the meadows and timber along the streams. They range a mile or more out into the bunch-grass hills and often are found in trees about isolated farm houses. A few remain throughout the winter. During the breeding season they may often be seen at the edge of the river securing mud to plaster their nests. In the late summer of 1914 a few were seen in yellow pine forest near Hompeg Falls and in the same kind of forest on a low ridge near the Oregon line. On the ridge near Twin Buttes R. S. they were seen in western larch forest. On Butte Creek they were numerous in the deciduous timber. One was seen in a small opening in the lowland fir forest near Hompeg Falls.

The main migration appeared at Prescott in 1905 during the last week of February. In 1915 they had nearly all left before Sept. 1. In 1906 a blizzard began on March 10, when the early spring migration was in full

swing, and on March 15 the temperature reached as low as  $-1^{\circ}$  F. at Prescott. With the ground partly covered by snow, thousands died before the weather moderated.

A nest found on April 23, 1906, two miles east of Prescott in an apple tree, contained one egg. On April 27 there were three eggs and later another was added. On May 3 one of the eggs was missing and the nest contained the headless body of a White-footed Mouse (*Peromyscus maniculatus gambelii*), which the robin was brooding with the eggs. On May 6 all the eggs were gone and the nest deserted. Another nest was found on April 28, 1906, and still another on May 13. On May 2, 1908, a freshly completed nest was found 20 feet high in a locust tree. One egg was laid between 8:30 and 9:15 A. M. on May 4. Another egg was laid between 9:30 and 10:30 A. M. on May 5. The female was disturbed while on the nest late on this evening and the nest was abandoned. On May 8, 1908, three nests, all in the last stages of construction, were found. Half-fledged and nearly-fledged young were abundant in early June, 1908. On April 9, 1913, a nest nearly completed was found. In 1915 a nest containing fully-fledged young was seen June 30. On May 18, 1908, a nest containing one egg was found on a post in a barn in the hills southwest of Prescott. On May 28 it contained four eggs. This nest was constructed of string, horse hair, and straw, but, probably owing to the scarcity of water, very little mud was used to plaster the nest.

***Ixoreus naevius naevius*.** VARIED THRUSH.—During the blizzard of early March, 1906, great numbers appeared near Prescott and many were killed. One was seen on April 1, 1913, and another on April 20 in the trees along the Touchet River. In 1915 they were noted rarely from Nov. 7 to Dec. 3. S. H. Lyman has seen them in the Blue Mountains in the fall and says they often appear in winter at Dayton.

***Sialia mexicana occidentalis*.** WESTERN BLUEBIRD.—Reported at Walla Walla (Belding, 1890, 262). From Nov. 13 to 15, 1915, a small flock was observed in an open field of the Touchet Valley and at the edge of timber near Prescott. On July 23, 1914, several were seen in yellow pine forest near Hompeg Falls.

***Sialia currucoides*.** MOUNTAIN BLUEBIRD.—Dawson and Bolles (1909, 260) give a breeding record for Wallula. One was seen June 18, 1914, on a telephone post in the prairie near Eureka. They occur sparingly in summer in the bunch-grass hills in the neighborhood of Prescott, and some are reported to breed in the town. In late July and early August, 1914 numbers were seen in open alpine fir forest on high ridges of the Blue Mountains, and a few were seen in yellow pines on a lower ridge.

Spring arrival dates near Prescott are March 14, 1905 and March 4, 1908.



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## A STUDY OF THE YELLOW-BILLED CUCKOO.

BY CLARA KERN BAYLISS.

ON July 24, 1916, I found a Yellow-billed Cuckoo's nest, with the bird incubating, ten feet from the ground on the horizontal branch of a small elm. Not having my "periscope" (an adjustable mirror at the top of a bamboo pole) with me, I assisted a little girl who had accompanied me, to climb the tree; and she reported that the nest contained three green eggs, one of them smaller and darker than the other two. As seen through the mirror next day I should describe the smaller as bluish-green and the others as greenish-blue.

July 29, at 6.30 P. M. the eggs were there as usual and the bird remained on the nest until I was almost under her, giving me an opportunity to note her yellow bill and her graceful, horizontal flight as she slipped noiselessly into another tree. The following day was Sunday and was exceedingly hot as was Monday forenoon. In the afternoon of Monday, July 31, there was a severe storm and the nest was not visited until the forenoon of Aug. 1, when there were three young birds in it, all black as ink, the two larger with black hairs (or quill cases) and the smaller with white

ones, on the body. A camera was strapped to the trunk of the tree and a photograph taken which shows the white "hairs" of the one.

The birds were certainly one day old and may have hatched on July 30. When jarred, they made a faint hissing or buzzing like that of a bee. Thinking the little white-haired birdling might be crowded off the frail platform, I took one of the larger birds home with me; and of that I shall speak later.

Toward evening Aug. 4, they were still there though the white-haired one was crowded to the edge of the nest with the big one lying partly upon him. At sundown Aug. 6, only the black-haired one was there, no trace of the other being discernible.

The remaining one was now larger and farther developed than his mate in my home and by this time had a few white quills on his back. He moved about uneasily and seemed to have his eyes open, but of that I could not be sure, looking through the mirror. He pushed himself to the edge and voided excreta upon the weeds below the tree where, contrary to the observations of Jean Stratton Porter, there were seven or eight droppings.

On the evening of Aug. 8 the nest was empty. The old bird was near, but manifested less rather than more of her customary anxiety, if so calm and dignified a bird can be said ever to exhibit anxiety. She called no more than usual and gradually worked her way farther from the tree instead of remaining near to watch my movements. It scarcely seemed probable that the young one could have been able to leave the nest even if, after the way of his species, his feathers had burst into bloom all in one day. He was eight and a half, and may have been nine and a half days old, and it is barely possible that he may have departed without protest and without tragedy. Among the sticks of the shallow platform which had served him for a cradle were bits of the shell that had encased him, now faded almost to robin's-egg blue. The voice of the parent was heard in the vicinity for three or four weeks longer.

The bird I took home to study was as ugly a specimen as could well be; black from tip to toe except the dark wine-colored under mandible and edges of the upper one; big bodied; stupid in the morning and voracious in the afternoon; voiding instantly after swallowing; making that faint hissing and a little *quirt, squirt*;

sleeping with head laid flat before him like an alligator, and occasionally moving it from side to side in serpent-like manner;—utterly ugly except his mouth which when wide open, was cup-shaped and red, with cream-colored knobs in it, making it look like a red flower with sessile yellowish stamens. The legs were black, the toes were black, two of them standing forward, two back, like the toes of a woodpecker. The wings were little flat, crooked sticks such as might be sawed out of a black shingle; and he let them hang down like legs, even using them to prop himself up, and two or three times fairly standing on “all fours.” When he ate he sat up as straight as a Penguin, resting on the back part of his body, tarsi flat out in front of him and toes clutching the flannel cloth in the bottom of his box, to balance himself. When he raised his head there was a perpendicular line from the tip of his bill down the under part of his body to the box in which he sat.

After three days he began to fold his wings to his sides and now and then to stretch and finally to flap them. The hissing gradually merged toward the hungry cry of young birds when being fed. The ciliae on the edges of his wings and tail became bristles and then tiny white-tipped feather-cases; and from his chin down each side of his bare under body, curving upward to the tail, came three or four overlapping rows of minute white quills or feather cases, making him look when sitting up as if he had on a cut-away coat. These began to show Aug. 3, when he was four, possibly five days old. He uttered his little *quirt* and the buzzing sound without opening his mouth. The former he ceased to make on Aug. 4 and 5, but the latter became louder and was uttered when he ate and whenever his box was touched, whether he raised his head or not.

He lacked regurgitated food and brooding, and every morning was so dumpish that he seemed about to die. But toward night he became as lively and as hungry as ever. Yet he was not thriving as well as the one in the nest and it was my intention to exchange the two;—but he circumvented me.

At first he was fed on large caterpillars from a laurel oak; later on berries and the larvæ from cabbages. He did not seem to relish water or the white of egg and worked his bill and his black tipped tongue as if trying to spit it out. Flies were his specialty, so I secured a quantity that had been scalded and emptied out of a trap.

They were dry and hard, but after wetting them I gave him all he wanted, which was as much as a large tablespoonful. That was unwise, but he was voracious. Next morning, Aug. 6, he was only slightly more inert than usual, but could scarcely swallow a cabbage worm. When given a little juice from blackberries, much to my surprise, he lay over on his side, and died. — And he had never opened his eyes on the troubles of this world.

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#### THE EXTRACTION OF FAT FROM BIRD-SKINS.

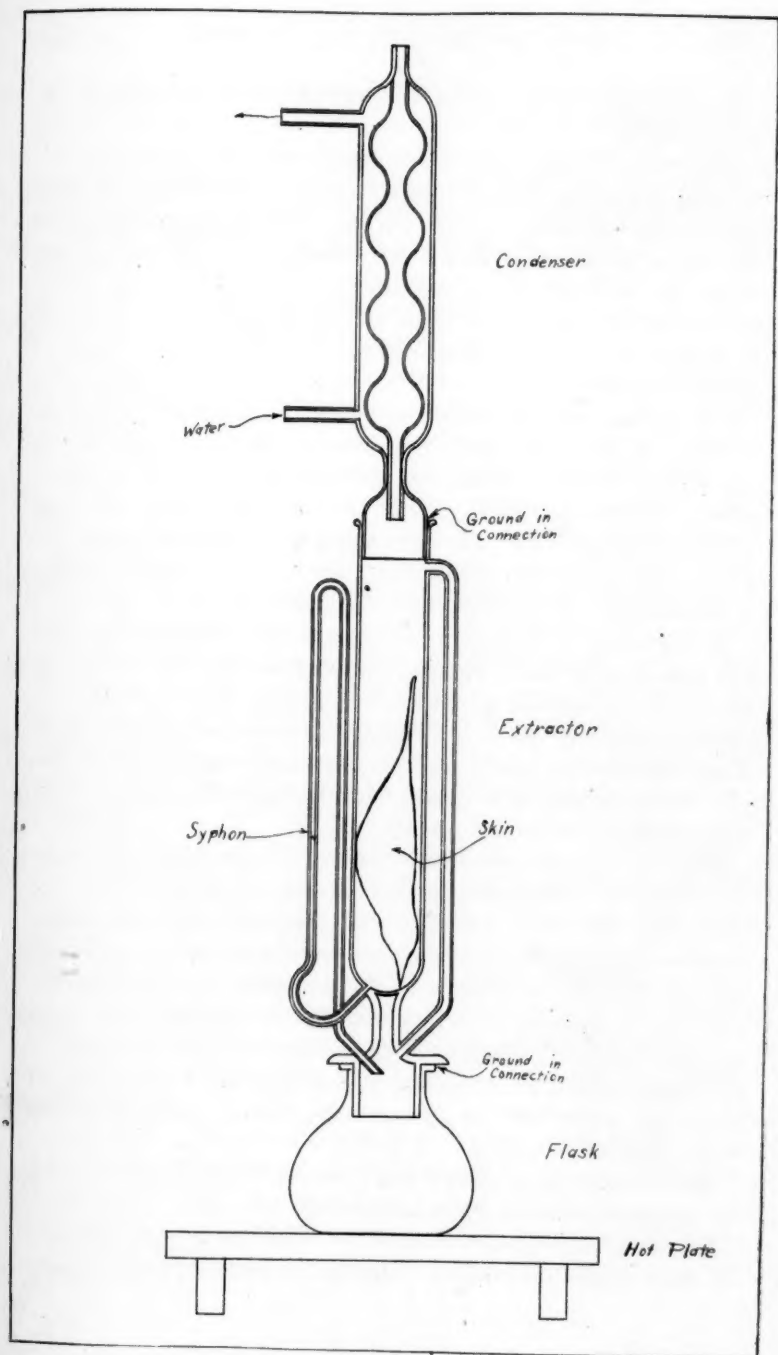
BY HOYES LLOYD.

MANY valuable bird-skins are rapidly deteriorating, and this work was undertaken with a view to discover a simple method to stop the decomposition of existing specimens and to enable us to prepare specimens which will not decompose from the same causes, in the years to come. If this method succeeds in preventing the imminent total destruction of type specimens and specimens of extinct species, as well as many others of value to the ornithologist I shall be amply rewarded.

The decay of bird-skins is due, apparently, to the presence of fat. This fat gradually spreads over the entire specimen and even saturates the label, in time making it illegible. The fat itself discolors the specimen and every particle of dust with which the specimen comes in contact adheres to the fat, thus increasing the discoloration. Finally, we have a dirty, greasy bird-skin; the feathers are matted and adhere to each other in groups and the specimen does not resemble the living bird in the slightest degree. Then the fat decomposes, perhaps very slowly, and the fatty acids produced slowly attack the skin itself and gradually it falls to pieces and is utterly destroyed.

Washing or wiping the specimen with solvents for fats is only a





subterfuge and, as all the fat is not removed, the decomposition still continues.

The method which I have found successful consists in washing, soaking and extracting the specimen with automatically repeated doses of the freshly distilled fat solvent. It is an adaptation of the Soxhlet extraction apparatus of the chemist. By this method the entire bird-skin, including the skin, feathers, beak, feet and label, is rendered chemically free from fat, the decomposition due to fat is checked completely, and the future existence of the specimen is probably assured.

The apparatus used is shown in the figure. The one represented is made of glass connected by ground in joints. Cold water is supplied to the invert condenser and heat is supplied to the flask of solvent by an electric light bulb or by an electric hot plate provided with a rheostat so that the temperature can be adjusted. Do not use a flame to heat the flask, as the solvent, ethyl-ether,  $(C_2H_5)_2O$  is inflammable and explosive when mixed with air; it boils at  $35^{\circ}C$ .

The specimen to be cleaned is placed in the extraction chamber; the apparatus is closed, enough ether is poured in the opening in the top of the condenser to charge the syphon twice, and the opening covered with a funnel or loose cap. It must not be closed tight. Then the water is turned into the condenser and the current for the heating apparatus is turned on. Sufficient heat is being supplied when the liquid boils gently.

The ether vapor goes around by way of the by-pass into the condenser, is condensed and falls on the specimen. When the extraction chamber is full of solvent, the first extracting charge syphons automatically into the flask below and carries with it all the fat which it has dissolved. As the operation continues, the specimen is repeatedly washed with freshly distilled ether until not a vestige of fat remains. Two or three hours should complete the operation, but the apparatus can safely be left in operation all night, if it is carefully set up and if the heating apparatus is correctly adjusted.

The operation is completed when the solvent, after passing over the specimen, remains perfectly colorless.

Before opening the apparatus, turn off the heating unit and allow the ether to cool thoroughly. This can be hastened by immersing

the bottom flask in water or in ice water. The ventilation of the room should be good, as the inhaling of ether produces headache and, finally, anesthesia. Remove the specimen and place it on clean absorbent cotton. Dry with a gentle blast of clean air, or in a current of clean air. The feathers can be adjusted during drying. Any dirt which had adhered to the fat will blow away as dust. Cornmeal, used as an absorbent in the preparation of skins which were later cleaned by this method, fell out of the plumage like sand, or was carried off by the air blast.

This apparatus can be made of copper, if a large number of skins are to be cleaned, and it can then be of considerable size and the extraction chamber packed with specimens. If made of copper, the top of the extraction chamber and condenser should be removable. The joint where the cover with condenser attached joins the extraction chamber must be gas-tight. In the copper apparatus there should be a pipe provided with a stop-cock connecting the bottom of the extraction chamber with the distillation flask. The stop-cock should be closed during the extracting, but can be opened to drain the ether from the extraction chamber before the chamber is opened. In using a metal apparatus, the length of time required for complete extraction of the fat will have to be judged by experience. In the glass apparatus, the color of the solvent in the extraction chamber indicates when the extraction is complete.

All skins must be dry before being subjected to this process. If it is necessary to relax a skin before extracting, dry it temporarily in a shape to fit the extractor, extract it, relax after ether has evaporated and set again.

Newly made skins known to be greasy can be treated as soon as dry. The ether does not relax the skin in the slightest degree. Some arsenic may be washed from the skin by mechanical action, but sufficient will be left to render the bird-skin safe from insect attacks.

The use of such other solvents as petroleum ether, gasoline and carbon tetrachloride for extracting fat can be experimented with to advantage, using this apparatus.

The author has used this method on the following specimens, with the result recorded. After treatment, the specimens were

compared with duplicates and the color of the plumage was normal in each case.

*Ægialitis semipalmata.* Semipalmated Plover, Toronto, Canada, 1905.

*Condition.* Greasy and dirty, the feathers stuck together with fat; discolored, dusty.

*Result.* Entire plumage clean, feathers beneath, fluffy and white.

*Charadrius dubius dubius.* Philippines, 1909.

*Condition.* Mouldy, greasy and stained with blood.

*Result.* Entire plumage clean, breast feathers which were exposed to air still rusty, ones covered by wings perfectly white.

*Limonites ruficollis.* Japan, 1895.

*Condition.* Dirty, breast greasy and yellow.

*Result.* Entire plumage clean and fluffy breast almost free from yellow.

*Pelidna alpina.* Scotland, 1873.

*Condition.* Practically in the last stages of fatty decomposition; feathers hard.

*Result.* Clean and free from grease, feathers soft.

In order to determine whether or not this solvent had any decolorizing effect, a series of experiments was made. A number of hummingbird skins were immersed in ether for one and one-half hours, dried and compared with duplicates; a number of feathers were taken from bird skins, immersed in ether for one and one-half hours, and compared with feathers from the same area on the bird-skin from which they were taken; and a number of larger feathers were cut in two, one half immersed in ether for one and one-half hours and compared with the untreated portion of the same feather. The tests were made with a view to variety in color. The results are summarized below.

## EFFECT OF IMMERSION IN ETHER ON FEATHER PIGMENTS.

| SPECIES                              | PORTION                    | COLOR                            | EFFECT |
|--------------------------------------|----------------------------|----------------------------------|--------|
| <i>Chrysolampis mosquitus</i>        | Whole                      | Iridescent red and gold          | None   |
| <i>Selasphorus alleni</i>            | "                          | Iridescent scarlet orange        | "      |
| <i>Selasphorus rufus</i>             | "                          | Iridescent scarlet orange        | "      |
| <i>Petasophora cyanota cabanidis</i> | "                          | Metallic green and metallic blue | "      |
| <i>Munia maja</i>                    | "                          | Various browns                   | "      |
| <i>Piranga erythromelas</i> ♂        | Back feathers              | Scarlet                          | "      |
| <i>Piranga erythromelas</i> ♀        | Side of breast feathers    | Yellow                           | "      |
| <i>Melospittacus undulatus</i>       | Upper tail covert feathers | Green                            | "      |
| <i>Dendroica fusca</i>               | Breast feathers            | Orange                           | "      |
| <i>Chlorophanes spiza exsul</i>      | Back feathers              | Metallic blue green              | "      |
| <i>Sporophila corvina</i>            | Secondary                  | Jet black                        | "      |
| <i>Setophaga ruticilla</i>           | Side of breast feathers    | Orange salmon                    | "      |
| <i>Phoenicurus phoenicurus</i>       | Rump feathers              | Rufous brown                     | "      |
| <i>Tanagra cana</i>                  | Half primary               | Blue edging                      | "      |
| <i>Stoparola melanops</i>            | Half secondary             | Blue                             | "      |

## CONCLUSION.

The method given will absolutely remove fat from bird-skins. Damage caused by decomposition which has already occurred cannot be remedied, but an application of this method will stop all further decomposition due to fat. By removing dirt adhering to the grease, the true colors of the plumage can be seen and studied.

Valuable specimens, type specimens and specimens of extinct species can be protected by this process and will have their existence assured for a much greater period of time.

My sincere thanks are due to Mr. J. H. Fleming for providing specimens for the work and for deciding whether or not color changes occurred as a result of the action of the solvent.



THE EVENING GROSBEEK (*HESPERIPHONA VESPERTINA*) IN MAINE, WITH REMARKS ON ITS DISTRIBUTION.

BY ARTHUR H. NORTON.

LIKE the other states east of New York, Maine, so far as known, was first visited by the Evening Grosbeak during the well chronicled flight of 1889-90,<sup>1</sup> when between the dates of Jan. 10 and March 18, 1890 six specimens were detected according to the following records: A male was seen at Orono, Feb. 28, 1890;<sup>2</sup> two were seen at Bangor, one a female having been taken, March 18, 1890.<sup>3</sup> One was taken by S. L. Crosby "near Bangor" in the spring of 1890;<sup>4</sup> a male was taken at Bates College campus, Lewiston, Jan. 10, 1890;<sup>5</sup> and a specimen was taken at Fryeburg, without data being preserved.<sup>6</sup>

During the next nineteen years no report appears for this state, though the birds were detected east of New York in very small numbers on several occasions, as Massachusetts during the season of 1903-04,<sup>7</sup> and in Connecticut in 1905 and 1907.<sup>8</sup>

In the late winter or early spring of 1909 an adult male was taken in the Woodfords section of Portland.<sup>9</sup>

Since that time its occurrence in Maine has been frequent and during the winters of 1915-1916 and 1916-1917, it was actually abundant, and widely distributed.

On November 10, 1910 Miss Adeline Willis saw three in Bridgton.<sup>10</sup>

<sup>1</sup> See especially Auk, 1890, Vol. VII. Forest and Stream, 1890, Vol. XXXIV. Ornithologist and Oölogist, 1890, Vol. XV. Also Butler, Auk, 1892, IX: 238-247, and Proc. Canadian Inst. 1890-91, iii, pp. 76-89.

<sup>2</sup> 1890: Fernald, Orn. & OöL. XV: 46.

<sup>3</sup> 1890: Shepherd, OöL. VII: 86.

<sup>4</sup> 1890: Call, OöL. VII: 252.

<sup>5</sup> 1891: Walter, Birds of Androscoggin Co., 14.

<sup>6</sup> 1897: Knight, Bull. 3, U. of M., 89. Knight also reported, one, p. 90, "Seen by S. L. Crosby" which was taken at Brewer, but with the probability that it is the same bird recorded by Call 1890, I have not treated it as a separate record.

<sup>7</sup> 1904: Nichols, Auk, XXI: 81, and Brown, *Ibid.*, 385.

<sup>8</sup> 1905: Hutchins, Bird Lore VII: 173, 174. 1907: Bruen, Wils. Bull. XIX: 162.

<sup>9</sup> 1909: Rich, Journ. Me. Orn. Soc. XI: 26.

<sup>10</sup> 1911: Willis, Bird-Lore, XIII: 93. Unfortunately this record was editorially anticipated, Bird-Lore, XIII: 48, and given as Naples.

In 1912-13 another flight to the northeastern states was noticed and though not a large one, the following Maine reports came to hand:—A flock at Machias in November, 1912, was seen by Mr. John Powers and positively identified, and some numbers were observed elsewhere in Washington, and in Aroostook Counties that winter.<sup>1</sup> The same season Miss Harriette Abbott recorded a flock of twenty at Fairfield (in the Kennebec Valley), March 2 which remained about three weeks.<sup>2</sup> On March 22, 1913, Mrs. Wm. I. Hacker saw three females in a Rowan tree by her window in the Deering Center section of Portland. On the same date and for several succeeding days, on the grounds of the Swedenborgian church in Bath, Miss Nellie F. Dunton reports several as having been seen. On March 29, 1913 Mrs. F. M. Ray observed an adult male and four dull colored companions in Saccarappa Cemetery, Westbrook, and on April 1 she found eleven there, two of which were adult males. A few hours later with her guidance, I saw nine at the same place, one being an adult male. Mrs. Ray kept a careful watch but saw no more until April 3 when the birds made their last appearance there for the season.

The following season, 1913-14, Mr. Freelan Howe reported fourteen at South Paris, late in December,<sup>3</sup> while Mr. Nathan C. Brown observed and recorded seven at Western Cemetery, Portland, on April 16, 1914.<sup>4</sup>

The season of 1915-1916 was remarkable for the great migration of Evening Grosbeaks, extending from Minnesota<sup>5</sup> to St. Stephen, New Brunswick,<sup>6</sup> and from Montreal<sup>7</sup> to Pennsylvania.<sup>8</sup>

The reports from New York and the New England states, for this winter published in 'The Auk' and 'Bird-Lore' are too numerous to mention in this connection. Throughout Maine, where reports could be obtained, the birds were observed in various numbers, showing that very large numbers visited the State. The following extracts from letters will show something of the extent

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<sup>1</sup> W. L. Powers in letter.

<sup>2</sup> 1913: Abbott, Bird-Lore, XV: 309.

<sup>3</sup> 1914: Howe, Bird-Lore, XVI: 27.

<sup>4</sup> 1915: Brown, Auk, XXXII: 102.

<sup>5</sup> 1916: Roberts, Occ. Papers Geol. & N. H. Surv. Minn., Zool. Div. No. 1.

<sup>6</sup> 1916: Burnett, Bird-Lore, XVIII: 180.

<sup>7</sup> 1916: Gammell, Can. Rec. Sci. IX: 483-488.

<sup>8</sup> 1916: Gage, Auk, XXXIII: 325.

of this migration, and of the numbers of birds observed at different places in the State.

AROOSTOOK COUNTY.—Mr. L. W. Robbins writing from Houlton, April 4, 1916, states: "About three weeks ago I saw a flock of six, two in mature plumage. There is not the slightest doubt of their presence in large numbers in this part of the state this winter."

WASHINGTON COUNTY.—Mr. Clarence H. Clark of Lubec, wrote:—"January first to April first, several small flocks visited Eastern Maine and were seen at Millbridge, Steuben, Machias, Calais and Lubec." Prof. Wm. L. Powers principal of the Washington (County) Normal School, wrote on April 10:—"We have had a large flock of Evening Grosbeaks here in Machias since February: the largest number reported to me by any one person is seventeen seen at one time."

HANCOCK COUNTY.—In the same letter Prof. Powers stated that one had been reported to him from Sullivan.

On March 19, 1916 Miss Cordelia J. Stanwood wrote from Ellsworth that she had seen a male that day, and the birds had been reported in town for about three weeks. Mrs. Augusta (W. H.) Gardiner of Bucksport wrote:—"I first saw the birds on December 31, 1915. There were but two of them. In January, 1916, small flocks numbering from four or five to a dozen were seen. .... About February 17 they seemed to increase in numbers to forty or fifty: they stayed through April and along into May, my latest date is May 11, [1916]."

PENOBSCOT COUNTY.—Jan. 13, 1916, Dr. Wallace Craig at Orono, wrote: "Two of us saw a flock of Evening Grosbeaks here yesterday." Dr. Craig furnished a carefully prepared copy of observations in his possession showing date, place, number of birds and name of observer. This report shows dates between Jan. 12 and April 10, 1916, at Orono, chiefly on the State University campus, and at Bangor and Stillwater. Twenty is the largest number reported (seen March 5), in the list, with most of the definite numbers ranging between this number and ten.

The list shows the larger numbers to have been observed from March 4 (eighteen) to March 19 (fifteen). Norman Lewis in the 'Bangor Commercial' for April, 1916 published a signed letter reporting over a hundred seen at Hampden. Later in 'Bird-Lore'

Mr. Lewis<sup>1</sup> stated that they were first seen in Hampden, March 17 and remained until April 26, and that the large flock mentioned was seen on April 1.

SOMERSET COUNTY.—On April 16, 1916 Mr. J. Merton Swain, who travels extensively in south central Maine, reported Evening Grosbeaks in the following Somerset County towns:—Bingham, Flagstaff, New Portland, North Anson, Pittsfield, Solon, and Skowhegan, in flocks of from ten or fifteen to forty and fifty, with adult males predominating.

KENNEBEC COUNTY.—From Mr. Arch Hiram Morrell, of Gardiner, we have the information that the birds were noticed in Gardiner about the first of March, remaining as late as April 20. The first flock contained eight, about half males, while the largest flock seen at his place, on April 5, contained over seventeen birds. Mr. Morrell states, "about half were always males." In a later letter, he states that some remained until May 17.

On May 7, 1916, Miss Dora M. Norton, whose home is in Gardiner, wrote that a flock had been near her home "for something like two weeks when I left home nearly two weeks ago." There were twenty-five or thirty of the birds. Mr. Alton S. Pope reported two seen at Manchester, March 11 and stated that they had been reported from Augusta and Winthrop. Mr. J. Merton Swain (April 16) stated that he had seen flocks in Mt. Vernon, Readfield and Waterville.

KNOX COUNTY.—June 12, 1916, Mrs. Adelaide C. Bird, of Rockland, reported in full the bird's occurrence at that place. From her report we take this summary. First seen, Feb. 16, a young male; a dozen March 7; large flocks April 9; and small numbers seen at various dates through April. The last were seen April 28. Mr. Niven C. Kallock, of Warren, reported Feb. 13 one male; Feb. 15 two males and a female, and two on April 2, all at Warren; and a male at Thomaston, March 27.

SAGadahoc COUNTY.—Miss Nellie F. Donton of Bath on April 3, reported that a pair had been seen there. A week later she sent a clipping from the Bath 'Daily Times' of April 13, reporting that the teachers and pupils of the Weeks Street Grammar school had

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<sup>1</sup> 1916: Lewis, *Bird-Lore*, XVIII: 368.

observed a flock of over fifty Evening Grosbeaks in woods at the foot of Cherry Street in that city.

FRANKLIN COUNTY.—Resuming Mr. Swain's long list of stations we find the following Franklin County towns — Eustis, and Stratton, Farmington, Kingfield, Phillips and Strong. At Farmington, writes Mr. Swain, "They came early in January, and have been feeding on the bank in front of my house every day since." In a more recent letter, he states that on Sunday, May 28, 1916, they were in the usual numbers, "and on Monday morning I heard them as I went to take the train . . . we counted about thirty-five or forty on the 28th."

ANDROSCOGGIN COUNTY.—Carrie E. Miller has reported the appearance of the birds at Lewiston, Dec. 31, 1915. Seventeen were present late in January, increasing later to thirty-five.<sup>1</sup>

OXFORD COUNTY.—Letters from Mrs. Albert D. Park of South Paris furnished the earliest record for the season, Nov. 27, 1915, when a female came to her premises, and "was here for some weeks before others were seen." On Jan. 9, 1916, eighteen were present, and she counted twenty-five in one flock during the winter. On April 4 she wrote, "three pairs or more were here yesterday." and later: "A female Evening Grosbeak was seen in our Village on June 4th." In her note of April 4 she stated, "They have been coming about four years."

CUMBERLAND COUNTY.—A single immature male was seen by Miss Gertrude Morse, at Cape Elizabeth, Jan. 18, 1916. Miss Morse also furnished a report of the occurrence of four males and one female seen at Gorham, Feb. 19, 1916. March 3, 1916 Mr. Eben Corey reported the observation of two males at the Western Cemetery, Portland. The birds took up permanent quarters in this western section of the city, increasing considerably in numbers until late March, when they decreased. After March 31 the writer failed to find them or to hear of their presence until April 11, when a single female was found at the cemetery. On May 5 Mr. Storrs Brigham observed about a dozen there. On May 8 four females rewarded his search and on May 9 and 10 he saw apparently the same birds. May 10 is the latest reported

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<sup>1</sup> 1916: Miller, *Bird-Lore*, XVIII: 180.



occurrence in Portland this season. During March occasional small groups, pairs or single birds were reported as seen in other parts of Portland, but so far as the writer learned none became settled for any length of time, except those at the Western section.<sup>1</sup>

At Brunswick Miss Edith Boardman saw five females on March 12 and a male and a female March 20, 1916. On March 14 Philip Cobb wrote: "Seven Evening Grosbeaks on the campus (Bowdoin College, Brunswick) today." Dr. O. A. Gross also wrote, "I saw a flock of seven on Bowdoin Campus (Brunswick) from March 18th to March 30th, 1916." At Pine Point, in Scarborough, Mr. Fred S. Walker saw five in his garden on several occasions, between March 27 and March 31, 1916. In a letter in the 'Portland Daily Press' of April 17, Mrs. Reuben Johnson reported a flock of "at least twenty April 14th and 15th on Long Island, in Casco Bay." At South Windham Mr. Fred Shaw saw "about twelve April 11th" (1916). At Westbrook Mrs. F. M. Ray saw two at Saccarappa cemetery which remained all day Feb. 25, 1916, while a short distance away, two were seen early in March for several days. On May 6 Mrs. Ray saw a single female.

YORK COUNTY.—Mr. Wm. E. Bary of Kennebunk reported several single birds, and small flocks of from four to six at various times during the winter in different parts of that town. Mrs. Fred P. Abbott, of Saco, also reported their presence in Saco and Biddeford.

The season of 1916-17 again found the birds in Maine, from Nov. 4, 1916, to June 2, 1917.

The winter was one of the coldest for many years, with an unusual amount of snow which covered the ground from December well through the month of March. In the city of Portland, the Rowan, Red, and Black Cherry trees, which in other seasons have afforded these birds much winter food, had borne no fruit. These conditions may partly explain the fact that the birds usually appeared in wandering bands, until the ground became bare in late March and April, when they again became settled for the remainder of their stay. But while the snow covered the ground the birds

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<sup>1</sup> In Bird-Lore, 1916, XVIII: 249. Miss Sara C. Eastman reports the occurrence of the birds at Portland.

were seen for a few days in a place while some food was available, or they made a single visit and were not seen again.

A considerable number of local reports were gathered, again showing a wide invasion, and the number of birds present, rather large.

WASHINGTON COUNTY.—On January 27, 1917, Mr. Clarence H. Clark wrote, "The Evening Grosbeaks are visiting this section again this winter: have heard of no large flocks, only scattering birds."

PENOBSCOT COUNTY.—Arch Hiram Morrell under date of December 31, 1916 wrote "I have met some people who said the Evening Grosbeaks were staying in Bangor. They had seen them since about two weeks before Christmas. There were five in all, four males. The birds visited a Pine tree near their house, apparently getting food near the tips of the branches."

Mrs. Mary L. Morse, of Orono, on April 28, 1917, wrote, "The Evening Grosbeaks were here this winter but in less numbers, and people who saw them both winters seem to think they were not as frequently seen.—They were reported several times during the winter by members of the club who live in Bangor."

KENNEBEC COUNTY.—Miss Dora Norton, on April 18, 1917 wrote from Gardiner: "The flock this year is about" going from a point "in Farmingdale, about a quarter of a mile as the crow flies. They have been seen in quite another part of the city, in the vicinity of Lincoln Avenue."

SAGADAHOC COUNTY.—Miss Nellie F. Dunton, under date of March 30, 1917 says, "Dr. E. J. Marston saw a flock of possibly twenty-five three weeks ago last Sunday [i. e. Feb. 18, 1917] in the outskirts of Bath, mostly grey, only two or three yellow that he could see. He saw four of them some two or three weeks earlier on Center Street in town."

CUMBERLAND COUNTY.—Early in February, Philip Cobb reported that he had seen two males and three females on January 26 and 27 on the campus of Bowdoin College in Brunswick. April 5, 1917 Dr. Alfred O. Gross of Bowdoin College, wrote, "Mr. G. H. Brewster, who is specializing in bird work here, reports a group of seven, which were seen most every day from January 16th to February 5th and again March 1st (1917). I have two records

for Brunswick, January 20th, five; and February 25th, three." In Portland the first reports came to hand on January 11, 1917 and through that month, February, March and April, flocks of from five to twenty were seen at Cape Elizabeth, Portland, East Deering, Deering Center and Westbrook.

The writer saw seven in the western cemetery, Portland, May 4 and they were said to have been present several days later. At Falmouth Foreside Mr. Walter H. Rich saw an adult male in his garden June 2 at close range, and later in the day it returned with a dull colored companion. None were seen after this date.

OXFORD COUNTY.—Mrs. Albert D. Park wrote "I first observed the Evening Grosbeaks November 4th, 1916, [at South Paris] and they have been here all winter. March 26th [1917], I heard them, but as I went away for the week cannot say that they are there now [April 1]." Last fall the largest number seen was thirty-three; later from eight to fifteen."

YORK COUNTY.—Mr. John F. Dana of Portland, reported a small flock seen by him in the town of Alfred.

Gifted with a striking richness of plumage, a phlegmatic disposition in which fear is but poorly developed, having a written history<sup>1</sup> in which mystery, and romance have been involved, and having invaded a wide territory within a relatively short time, the Evening Grosbeak has received much attention wherever it has appeared. Hence it has an extensive, though scattered and fragmentary literature, in which its history, its winter habits, its food prefer-

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<sup>1</sup> The bird was first collected by an Indian boy at St. Sault Marie, M.(ichigan) T.(erritory) April 7th, 1823 and sent by H. R. Schoolcraft, an early American scientist, to Wm. Cooper, who described it as new in 1825 (Ann. N. Y. Lyc. N. H. 1: pt. ii: 219, 221). It was believed to be crepuscular, remaining in the deep shade of evergreens woods by day, sallying forth with "A singular strain" at twilight: hence the names *vespertina*, Evening Grosbeak, and *Hesperiphona*. Audubon's account (Orn. Bio. IV: 575) pertains chiefly to the subspecies long recognized as *H. v. montana* Ridg. part. probably *H. v. californica* Grinnell. Brewer's treatment 1874 (Hist. N. Am. Bds. I: 449), is a history of the entire species as then known. Coues, "History of the Evening Grosbeak," 1879 (Bull. Nutt. Orn. Cl. IV: 65, 75), is a review of the genus *Hesperiphona* in which of course *vespertina* is the central figure. Butler's Notes on the Evening Grosbeak, 1892 (Auk, IX: 238, 247), is a review chiefly of *H. vespertina vespertina* up to the close of the winter of 1889-90. In this paper the geographical features of its migration are predominant. A considerable number of summaries of its local occurrence have appeared in faunal lists and other regional papers.

Roberts' 'The Evening Grosbeak in Minnesota,' 1910 (Bull. Minn. Acad. Sci. IV: 406, 414) is a monographic article of general interest.

ences and feeding habits, its anatomy, its migration, and its habits in captivity have been more or less fully told.

A survey of this extensive literature shows that its migration eastward has been accomplished by a gradual range extension, rather than by a sudden invasion.

In 1825,<sup>1</sup>—if not a few years earlier, according to Schoolcraft, the species was said to be common about the head of Lake Superior at Fond du Lac, etc., and during the first week of April 1823, a small flock was observed at Sault St. Marie, Michigan, from which the type was taken. It is also stated in the same article that in August of the same year Maj. Deafield observed a small flock near the Savannah River, northwest of Lake Superior.

For about thirty years it seems to have received no public notice, and whether it made visits to this southeastern part of its range is not known.

In 1853, P. R. Hoy<sup>2</sup> still reported it as "not uncommon" in Wisconsin.

During the early fifties it began to make its appearance farther and farther to the eastward, with more or less regularity and increasing frequency.

In 1854 a flock of five or six visited Toronto in December<sup>3</sup> and since the bird was present near Hamilton in April 1855,<sup>4</sup> we find possible if not probable evidence of wintering.

In 1858 it was observed and at least one specimen taken in northern Illinois.<sup>5</sup>

In March 1860, small numbers were present near Cleveland, Ohio.<sup>6</sup>

During the winter of 1861 and '62, it was present in the northern part of Huron County, Ontario,<sup>7</sup> and in May, 1863, at

1825, Cooper quoting Schoolcraft, Ann. Lye. N. H., N. Y., I: 221.

<sup>2</sup> Hoy, 1853, Proc. Phil. Acad., N. S., VI: 383. Here we may notice also Dr. Hoy's remarks on "Man's Influence on the Avifauna of Wisconsin" (1885, Proc. Nat. Hist. Soc. Wisc.) as having some possible bearing upon the initial migration eastward. He says: "*Hesperiphona vespertina* was formerly not uncommon in late fall and early spring in the Maple forests feeding on the seeds. . . . None have been seen here for the last twenty years. The Sugar Maple groves are nearly all converted into cordwood and the wheat occupies the site once visited by this northwestern bird."

<sup>3</sup> 1885: Seton, Auk, 11: 334. I have not seen Cottle's paper 1855, Can. Journ. III: 287.

<sup>4</sup> 1892: Garnier, Proc. Can. Inst. III: 88.

<sup>5</sup> 1859: Cassin, Proc. Phil. Acad., N. S., X: 191.

<sup>6</sup> 1860: Kirtland, Ohio Farmer: March 24.

<sup>7</sup> 1892: Garnier, Proc. Can. Inst. III: 88.

Woodstock, Ontario.<sup>1</sup> In 1865 one was taken in Huron County, Ontario.<sup>2</sup>

In 1866 it was included, without comment, in the list of birds observed in or near New York city.<sup>3</sup>

Butler, omitting McIlwraith's 1863 record, cites him as reporting it at Woodstock, Ontario, May, 1866. I find no other published report of this occurrence (?).<sup>4</sup>

Dr. Morris Gibbs reported its occurrence at Grand Rapids and Kalamazoo, Michigan, in March, 1869.<sup>5</sup> In 1870, it was seen at Minneapolis in November,<sup>6</sup> and at Toronto in late December,<sup>7</sup> while through the winter of 1870-71 large flocks were recorded from Freeport, Illinois.<sup>8</sup>

Butler regards this as the "First extensive wandering of the Evening Grosbeak."<sup>9</sup>

Nelson, in commenting on its abundance in Northern Illinois in the winter of 1871, says of the next winter [i. e. 1872], "Much rarer . . . I am told that formerly it was of much more regular occurrence."<sup>10</sup>

During the autumn "About 1872" six were secured from a small flock near Eureka, Illinois, about one hundred and twenty miles south of the place mentioned by Brewer.<sup>11</sup>

The following spring, March, 1873, it was observed at Kalamazoo, Michigan, indicating possible wintering south of the Lakes.<sup>12</sup> In 1874—date not given—one was shot in Huron County, Ontario.<sup>13</sup>

Some time during the winter of 1875, one was seen at Elizabethtown, Essex County, New York, by Mr. Cutting.<sup>14</sup>

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<sup>1</sup> 1883: McIlwraith, Bull. Nutt. Orn. Cl. VIII: 146. Butler cites McIlwraith, May 1866; a typographical error?

<sup>2</sup> 1892: Garnier, Proc. Can. Inst. III: 88.

<sup>3</sup> 1866: Lawrence, Ann. Lyc. N. H., N. Y., VIII: 289.

<sup>4</sup> 1892: Butler, Auk, IX.

<sup>5</sup> 1892: Butler, Auk, IX: 240.

<sup>6</sup> 1892: Hatch, Birds Minn. 291.

<sup>7</sup> 1885: Seton, Auk, II: 334.

<sup>8</sup> 1874: Brewer, Hist. N. Am. Bds. I: 452.

<sup>9</sup> 1892: Butler, Auk, IX: 247.

<sup>10</sup> 1876: Nelson, Bull. Essex Inst. VIII: 104.

<sup>11</sup> 1881: Hay, Bull. Nutt. Orn. Cl. VI: 179.

<sup>12</sup> 1892: Butler, Auk, IX: 240.

<sup>13</sup> 1892: Garnier, Proc. Can. Inst. III: 88.

<sup>14</sup> 1875: Brewer, Proc. Bost. Soc. N. H. XVII: 451.



It is unfortunate that the last two records are without specific dates, which would enable us to determine whether they belong to one or to two seasons.

The season of 1878-79<sup>1</sup> found the birds in Kalamazoo County, Michigan, from Nov. 20 to May 6, and as far south as Lafayette, Indiana,<sup>2</sup> where one was taken, and as far west as Minnesota.<sup>3</sup>

In 1883-84 a migration of noteworthy proportions occurred, in Minnesota, Wisconsin and Iowa,<sup>4</sup> with records from Indiana,<sup>5</sup> and New York — the date of the last being July 8, 1882.<sup>6</sup>

In 1886-87 another extensive migration was observed, when the birds were more or less abundant,—sometimes in considerable numbers, from Wisconsin and Iowa, to New York, and from Ontario to Kentucky. The next migration 1889-90 carried the bird into Minnesota, Montreal and Maine, and southward to Pennsylvania. Since that time its occurrence in parts of the region east of Lake Michigan has been frequent and migrations of larger proportions have occurred in the easternmost states in 1910-11, 1915-16 and 1916-17.

With due consideration of the fact that we are dealing with a member of the *Coccothraustinae*, a group in which many of the species are noted for the irregularity of their migrations we have found in the review just taken that the bird under consideration has been constantly extending its winter range eastward since 1854. It should also be remembered that the blank period in the bird's history between 1823 and 1853, as well as that in the early eighties, when its records begin to multiply, are periods when there were but few observers, and perhaps even fewer mediums of publication, to say nothing of the undeveloped habit of publishing personal observations. And we find to day, much force in Butler's statement,—“had there been the number of observers at those times there are now, we should have learned more of the extent of those dispersals.”

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<sup>1</sup> 1879: Gibbs, Bull. U. S. Geol. Surv. Terr. V: 486.

<sup>2</sup> 1892: Butler, Auk, IX: 240.

<sup>3</sup> 1910: Roberts, Bull. Minn. Acad. Sci. IV: 409.

<sup>4</sup> 1888: Cooke, Bull. 2, U. S. Div. Econ. Orn. 178.

<sup>5</sup> 1892: Butler, Auk, IX: 240, 241.

<sup>6</sup> Coues: Bull. Nutt. Orn. Cl. VII: 250.

*Hesperiphona* is a genus with two known species which find suitable conditions for summer in the coniferous areas of alpine and boreal regions. The residents of alpine sections, retreat to the lowlands with more or less frequency in winter. Its ancient excursions to lower levels to escape severe conditions or famine must have been changed to wider ranging in search for food in winter which was always to be found in increasing abundance southward, producing eventually a definite migration southward as the need became urgent.

Increasing population, constantly pressing its members farther and farther southeastward, sooner or later found this subspecies at the practical southern limit of the coniferous forests in the Middle West. Such a condition in a prolific race would result in stagnation and decline through over population and competition; in a forced adaptation to widely different conditions in the land to the southward; or in a further invasion of the vast suitable region to the eastward.

It seems to require no draft upon the imagination, and no step into the realm of speculation, to realize that in this hasty review of this interesting history, we have seen the Evening Grosbeak, forced against the impassable barrier to its southern migration at the prairie region, slowly and steadily take its way eastward, to the Atlantic coast. Thus has our generation witnessed a species overflowing the bounds of its original habitat, and forming its route of migration along the line of congenial conditions as they exist to day!

Time is replete with instances no less remarkable than this, but it is indeed rare that man is permitted to witness them in the making.

IPSWICH BIRD NOTES.<sup>1</sup>

BY CHARLES W. TOWNSEND, M. D.

SINCE my 'Birds of Essex County' was published in 1905 as a Memoir of the Nuttall Ornithological Club I have collected a large number of bird notes from that county which I expect in due time will be published as a supplement. The following notes are of especial interest and are recorded here:

**Sterna caspia.** CASPIAN TERN.—Although this splendid tern is a fairly regular transient visitor in the autumn I have no record of so many of them being seen together as in this present year when on Aug. 31, 1917, twelve flew south in a loose flock over Ipswich beach within two hundred yards of me. Their large size, bright red bills, black caps and snowy plumage made a very striking picture. Several emitted their characteristic harsh rasping cries.

**Sterna dougalli.** ROSEATE TERN.—When the Essex County memoir, was published in 1905, I noted that I had never seen the bird and that it was a "Rare transient visitor." Since then there has been a great increase in the number of Common Terns along this coast, and, since 1910, the Roseate Tern has been seen among them and has become more and more common so that this year at times it has even surpassed them in numbers. The bird is easily recognized as a whiter bird than the Common Tern and one with a longer tail. The dark bill at once separates it from the Common Tern with its red, dark-tipped bill. Some of its cries are especially characteristic. The "cloth-tearing" cry is easily recognized and especially the rather sweet double note suggestive of the call of the Ring-neck Plover, which at times is shortened and roughened so that it sounds like *chivy*.

Both the Common and Roseate Terns and also the Arctic Tern feed their full grown young at the beach at Ipswich. Some of these birds may have come from Muskeegit on the south or the coast of Maine on the north. The abundance of the sand lance, *Ammodytes americanus*, which often fill the water in countless schools and leave with the falling tide a silvery covering to the sands, makes the Ipswich beach a favorite resort for terns. The young seem always to be hungry and call in a monotonous and beseeching way whenever an adult appears with a fish. There are three methods of receiving the fish from the parent:—either in the air, on the land, or on the water. In the air the feeding of the young is often a graceful and interesting performance. By a series of aerial evolutions

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<sup>1</sup> Read before the Nuttall Ornithological Club, Oct. 15, 1917.

the adult and young reach a point where the transference of the fish directly from bill to bill is made so quickly that one often can not be sure that the fish is thrown or dropped or actually passed from mouth to mouth. I am inclined to think that all three methods are used.

On the sand beach the young sometimes collect in numbers, while the adults fish for them, and all the young seem eager to take food from any adult. On one occasion at Ipswich I saw an adult tern with a fish in its bill alight on the beach near two immature birds who both clamored loudly to be fed. Disregarding their cries it flew to a third immature bird but was soon off and alighted near an adult to whom it delivered the fish which was swallowed.

The process of feeding the young bird on the surface of the water, is perhaps the most interesting, and points to the former more aquatic ancestry of the terns. An adult flies screaming with a fish in its bill, the young responds by a beseeching call, flies towards the parent, and alights on the water still calling. The old one flies down and delivers the fish without alighting or doing so but for a brief moment. The thing is done so quickly that it is often impossible to know what happens. The young one as soon as it receives the fish flies up into the air. It is rare for adult terns to alight on the water.

I have great hopes that this and other species of terns will return to the upper beach and dunes at Ipswich to breed as they did fifty years ago.

**Mergus serrator.** RED-BREASTED MERGANSER.—The breeding range of this bird according to the 'Check-List' extends on the Atlantic Coast as far south as southern Maine. Mr. E. H. Forbush in his 'Game Birds, Wild-Fowl and Shore Birds of Massachusetts,' 1912, page 66, gives records of cripples raising broods of young on Cape Cod. Although it is common for a few birds to spend the summer at Ipswich I never saw any evidence of breeding until July 30, 1916, when I found a group of eleven young birds nearly full grown with an adult female. A few rods off swam an adult male in partial moult into the eclipse plumage. The male swam alone some distances up the beach, came ashore and preened himself. On being disturbed by my approach, he waddled down to the water and flapped over its surface, but appeared, owing to the moult, to be unable to fly. A week later he had regained his flying powers. The family in the brown dress kept together all summer.

On July 4, 1917, I counted a compact flock of thirty Red-breasted Mergansers off the beach. There were two adult males moulting into eclipse plumage and one or two adult females. The others were young birds as shown by their smaller size and by the close ranks they kept as they turned this way and that. The flock must have been composed of three broods that had united together, a habit I have observed in Labrador in the case of Eiders. I did not have a chance to observe these birds again until the last of August, when I found a flock of twenty-three Red-breasted Mergansers, all in the brown plumage, all swimming together in a close flock.

**Asio wilsonianus.** LONG-EARED OWL.—This owl is generally con-

sidered a good mouser and the farmer's friend. Fisher, in his 'Hawks and Owls of the United States,' 1893, p. 140, says, "The Long-eared Owl is one of our most beneficial species, destroying vast numbers of injurious rodents and seldom touching insectivorous birds." The following record, which is very exceptional, puts him in another category.

On June 3, 1917, I visited a nest of this species, of which I had been kindly informed by Mr. C. E. Clark, in a pitch pine grove in the Ipswich dunes. Four days before Mr. Clark had found three young in the nest. This, probably an old Crow's nest, was in a pitch pine about twenty feet from the ground. Only one young was to be found and it was in the tree ten feet from the nest. It was in white down with a dark face and with ear tufts of white down. An adult bird flew about among and over the trees, alighting from time to time near the nest. Once it was mobbed by three Crows as it flew above the trees, but easily eluded them. This was in the middle of a sunny day. It constantly uttered low notes which suggested at times the barking of a small puppy, at times the notes *ud-hunk*.

There were numerous pellets around the foot of the tree and the whole upper part of the nest was heavily thatched with feathers and a few bones. I sent all the pellets I could find to the Biological Survey in Washington, and a month later some more pellets and the upper layers of the nest. The first report is as follows:

Contents of about 10 pellets: Red-winged Blackbird 1, Savannah Sparrow 1, Vesper Sparrow 1, Chipping Sparrow 1, Song Sparrow 1, Chewink 1, Black and White Warbler 1, Yellow Warbler 1, Pine Warbler 1, Maryland Yellowthroat 1, Thrushes sp. 2, other passerine birds (indeterminate) 2, Short-tailed Shrew 1, Jumping Mouse 10, Meadow Mouse 7.

The second set of pellets brought the following report:

Red-winged Blackbird 1, Sharp-tailed Sparrow 1, Song Sparrow 1, Yellow Warbler 1, Warblers sp. 2, Brown Thrasher 1, other passerine birds 2, Short-tailed Shrew 1, White-footed Mouse 1, Jumping Mouse 1, Meadow Mouse, 4.

It will be seen that this pair of owls had eaten some thirteen different species of birds and twenty-three individuals; also four species of mammals and twenty-five individuals.

Mr. E. W. Nelson in a letter of June 21, 1917, commenting on these findings says: "This is an interesting lot of pellets, as it is very unusual to find the long-eared owl feeding upon birds to such an extent. In a large number of pellets examined from winter roosts of these birds, we have found the bird remains making up considerably less than 10 per cent of the total animal contents. The owls in question must have had exceptional opportunities to secure birds, and the breeding season may also have had some effect in producing this habit." The Ipswich dunes are, as I have always maintained, particularly good regions for birds, and this owl seems to have had the instincts of a collector.

**Ceryle alcyon.** KINGFISHER.—This bird is believed to be such an exclusive fish eater that any deviation from this diet is worth recording.



Early in August, 1917, Mr. John Hair, gamekeeper of Mr. R. T. Crane at Ipswich, missed six of a four days old brood of Bob-whites. He had seen a Kingfisher nearby and later the same day saw it perched on the gable end of the little house where the Bob-whites had been hatched, and from there pounce on the young birds as they ran in and out. He shot the Kingfisher, and, on opening the bird, a female, found the legs and feathers of the young Bob-whites in its crop.

Most authors state that the Kingfisher is exclusively a fish eater. Knight, 'Birds of Maine', 1908, p. 270, says Kingfishers feed on "grasshoppers, also crickets, butterflies and moths, which latter two I have seen the birds take while on the wing, chasing them until they are caught." Weed and Dearborn, 'Birds in their Relations to Man,' 1903, p. 192, say: "The food consists principally of fish, but occasionally mice, frogs or grasshoppers are captured." I have been unable to find in literature any record of the capture of birds by Kingfishers.

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## NOTES ON NORTH AMERICAN BIRDS.

### V.

BY HARRY C. OBERHOLSER.

THE notes below presented<sup>1</sup> concern the status of four North American birds. These are, respectively, members of the families *Buteonidæ*, *Regulidæ*, and *Fringillidæ*.

#### *Astur atricapillus* (Wilson).

Dr. Ernst Hartert has recently<sup>2</sup> included the North American Goshawk, *Accipiter atricapillus* Wilson, among the subspecies of the European Goshawk, *Astur palumbarius* (Linnæus), or, as he calls it, *Accipiter gentilis* (Linnæus). Examination of a series of

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<sup>1</sup> For previous papers in this series, cf. 'The Auk,' XXXIV, April, 1917, pp. 191-196; XXXIV, July, 1917, pp. 321-329; XXXIV, October, 1917, pp. 465-470; and XXXV, January, 1918, pp. 62-65.

<sup>2</sup> Vögel paläarkt. Fauna, Heft LX (Band II, Heft 3), October, 1914, p. 1146.

both birds shows that Dr. Hartert is probably correct in his view of the status of the American bird. The latter differs from *Astur gentilis* in its more mottled or irregularly barred lower parts; but individual variation in each of the two races bridges this difference. The American Goshawk is certainly a very distinct form, but is best regarded as a subspecies of the European bird. The two American subspecies should therefore be called *Astur gentilis atricapillus* (Wilson); and *Astur gentilis striatulus* Ridgway.

**Regulus satrapa** Lichtenstein.

Mr. C. E. Hellmayr some time ago<sup>1</sup> considered the American Golden-crowned Kinglet a subspecies of the European Golden-crested Wren (*Regulus regulus*). Recent comparison of a series of specimens of both shows that this is undoubtedly the relationship of the two birds, for, although their ranges are entirely separate, being cut off by the Atlantic Ocean, they are fully connected by intermediate individuals, and, therefore, from a modern standpoint are, of course, subspecies. As there is no question regarding the subspecific relationship of the Western Golden-crowned Kinglet (*Regulus satrapa olivaceus* Baird), our two Golden-crowned Kinglets must now stand as *Regulus regulus satrapa* Lichtenstein, and *Regulus regulus olivaceus* Baird.

**Passerella iliaca altivagans** Riley.

The Fox Sparrow described by Mr. J. H. Riley as *Passerella iliaca altivagans*,<sup>2</sup> from the Moose Pass Branch of the Smoky River, Alberta, has been discredited by most subsequent authors. Further study of this bird, however, shows that it is a good form, most closely allied to *Passerella iliaca*, but differing in its more rufous upper parts, including the outer webs of the secondaries and tertiaries and of the tail; and in the more rufescent spots on the lower surface. From other races of *Passerella iliaca* it is so different as

<sup>1</sup> Wytman's Genera Avium, XVII, 1911, p. 8.

<sup>2</sup> Proc. Biol. Soc. Wash., XXIV, November 28, 1911, p. 234.

scarcely to need comparison. It therefore should be restored to standing among reputable subspecies. It breeds from at least central Alberta to northern British Columbia, and occurs in migration or winter south to Montana, Oregon, and California.

***Melospiza melodia inexpectata* Riley.**

The Song Sparrow described by Mr. J. H. Riley<sup>1</sup> as *Melospiza melodia inexpectata*, from near Moose Lake, British Columbia, has been by most authors considered invalid. A reëxamination of the type material, together with a considerable number of additional specimens which have accumulated since the publication of the original description, bears out the characters assigned, and shows, moreover, that it is a good race with a well-defined geographic distribution. It is most nearly allied to *Melospiza melodia rufina*, but is decidedly smaller, particularly in so far as the bill and wing are concerned; and is, in fact, a smaller, darker, somewhat heavily streaked edition of that bird. It can by no means be considered merely an intermediate between *Melospiza melodia merrilli* and *Melospiza melodia rufina*. It occupies an extensive area, ranging, as it does, from central Alberta to northern British Columbia.

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<sup>1</sup> Proc. Biol. Soc. Wash., XXIV, November 28, 1911, p. 234.

NOTES ON THE SUBSPECIES OF *NUMENIUS*  
*AMERICANUS* BECHSTEIN.

BY HARRY C. OBERHOLSER.

THE description by Dr. Louis B. Bishop of a new race of *Numenius americanus*<sup>1</sup> has drawn recent attention to this species. The present writer's work on the identification of the examples of this curlew from Texas and other localities in the collection of the Biological Survey in the United States National Museum serves to confirm Dr. Bishop's subspecific separation of the small race inhabiting the northern United States and southern Canada. Furthermore, this investigation has brought out some interesting points, particularly in the geographic distribution of the two forms, which did not appear in the original account of this new subspecies, and which now seem worth while placing on record.

In this connection we have examined a total of 279 specimens, which represents the combined series of the United States National Museum, including the Biological Survey, the Museum of Comparative Zoölogy, the Academy of Natural Sciences of Philadelphia, the American Museum of Natural History, and the Brooklyn Museum of Arts and Sciences; together with the private collections of Mr. John E. Thayer, Mr. William Brewster, Mr. A. C. Bent, Dr. Jonathan Dwight, Dr. Louis B. Bishop, and Dr. L. C. Sanford. To the authorities of the above mentioned museums and to the other gentlemen who have kindly placed material at our disposal we wish here to express our sincere thanks. We are also indebted to Mr. Charles Chubb of the British Museum for measurements of birds in the collection of that institution, which have made possible the subspecific identification of important specimens at present unavailable for our examination.

***Numenius americanus americanus* Bechstein.**

*N[umenius]. americanus* BECHSTEIN, in Latham, Allgem. Uebers. Vögel, IV, ii, 1812, p. 432 (New York and Hudson Bay).

<sup>1</sup> *Numenius americanus parvus* Bishop, 'The Auk,' XXVII, No. 1, January, 1910, p. 59.

*Numenius longirostra* WILSON, Amer. Ornith., VIII, 1814, p. 23, pl. XLIV, fig. 4 (coast of New Jersey).

*Numenius melanopus* VIEILLOT, Nouv. Dict. d'Hist. Nat., VIII, 1817, p. 306 (New York and Hudson Bay) (description based on the specimen described by Latham in Gen. Syn. Birds, III, part 1, 1785, p. 120, which came from New York; the Hudson Bay reference belongs probably to *Numenius hudsonius*).

CHARS. SUBSP.—Size large, particularly the bill and wing.

MEASUREMENTS.<sup>1</sup>—Male: wing, 268–281 mm.;<sup>2</sup> tail, 109–128 (average, 121); exposed culmen, 139–155 (148); tarsus, 78–90.5 (86.5).

Female: wing, 268.5–298 (average, 286) mm.; tail, 121–136 (126); exposed culmen, 166–222 (196); tarsus, 83–92 (88).

TYPE LOCALITY.—New York.<sup>3</sup>

GEOGRAPHIC DISTRIBUTION.—Western United States (excepting the northernmost part) and Mexico to Guatemala. Breeds in the middle and western United States, north to southern Michigan (once at Jackson), southern Wisconsin (formerly), northern Iowa (formerly), southern South Dakota, southern Wyoming, and southern Idaho; west to central southern Idaho and northeastern Nevada; south to central Utah, central New Mexico, northwestern Texas (casually to southeastern Texas), and northern Oklahoma; east to southeastern Kansas (Neosho Falls, formerly), southeastern Iowa (formerly), and northern Illinois (formerly). Winters in the southern United States and Mexico, north to central California, southern Arizona, southern Texas, and Georgia; and south to southern Lower California, Oaxaca, Dueñas in Guatemala, and Cozumel Island, Yucatan. Migrates east to southern Ontario, southern Quebec, New Brunswick, Nova Scotia, and Newfoundland, and southward over the eastern United States. No certain record for the West Indies.

*Remarks.*—This is one of the shore birds that have greatly decreased during the last decade. It has disappeared entirely as a breeder from Michigan, Wisconsin, Illinois, Iowa, eastern Nebraska, and at least eastern Kansas; and also has become very rare, probably a mere straggler, as a migrant in the United States east of the Mississippi River, whereas it was formerly a common transient along the Atlantic Coast north at least to Massachusetts. The above-mentioned breeding of this species in Michigan is based on a set of eggs without date, now preserved in the United States

<sup>1</sup> Transposed into millimeters from the measurements given by Dr. Louis B. Bishop, in 'The Auk,' XXVII, No. 1, January, 1910, p. 60.

<sup>2</sup> The average given by Dr. Bishop for the wing measurements of the male of this form is evidently an error.

<sup>3</sup> Designated by the American Ornithologists' Union Committee, Check-List of North American Birds, edition III, 1910, p. 124.



National Museum, which was collected by Mr. C. P. Davis at Jackson, Michigan. This seems to be the only authentic instance of its breeding in the State of Michigan. The breeding record from Neosho Falls, Kansas, above noted, is also authenticated by a set of eggs now in the United States National Museum, collected by Capt. B. F. Goss. A specimen obtained by Dr. E. A. Mearns at Cloverdale, New Mexico, on the Mexican Boundary Line, July 14, 1892, is a long way south of the southernmost part of the breeding range of this form, and, as will be noted, is indication that this species starts very early on its southward migration.

*Specimens examined*.— Altogether 89 examples of this subspecies have been examined, from the localities that follow:

*Arizona*.— Peck's Lake, Upper Verde Valley (April 20, 1886); Sonoyta Plains (August, 1901); Fort Verde (Nov. 8, 1886); near Naris, Pima County (Jan. 8, 1894).

*California*.— Monterey (Nov. 16, 1912); Berkeley (April 23, 1898); Hyperion, Los Angeles County (June 4, 1917); San Francisco; San Diego.

*Colorado*.— Spanish Peak (April 17, 1877).

*Florida*.— Tarpon Springs (Sept. 7, 1889; July 5, 1888); Gasparilla (Feb. 6, 1884).

*Georgia*.— Savannah (January, 1860); Sapelo (Nov. 19, 1887).

*Idaho*.— Dickey (June 8, 1912); American Falls (May 27, 1911).

*Illinois*.— Oaka (April 20, 1881).

*Iowa*.— Dickinson County (June 10, 1881).

*Kansas*.— Fort Hays (June 12, 1871).

*Massachusetts*.— Eastern Massachusetts (1847).

*Missouri*.— Near Snatch Creek (June 7, 1864).

*Nevada*.— Franklin Lake (June 24, 1898).

*New Jersey*.— Cape May (Sept. 14, 1880).

*New Mexico*.— Raton (May 10, 1901); Cloverdale, Mexican Boundary Line (July 14, 1892).

*New York*.— Bought in New York City (April 7, 1879); near New York (1841).

*South Carolina*.— Hilton Head (April 1, 1864).

*South Dakota*.— White River.

*Texas*.— Valentine (Aug. 12, 1902); Padre Island (Aug. 21, 1891); Point Isabel (Feb. 19, 1881; March 5, 1881); High Island

(Dec. 19, 1916); Rockport (Feb. 28, 1896); Nueces County (Oct. 9 and 10, 1912; Nov. 23 and 24, 1912); Corpus Christi (Sept. 16, 1886; May, 1882; Feb. 12, 1899; Mar. 12, 1899; Oct. 20 and 24, 1909); Brownsville (Feb. 3, 1897; Sept. 8, 1893; Nov. 9 and 10, 1914; Sept. 26, 1914; Dec. 11, 14, and 22, 1909; Nov. 18, 1909).

*Utah*.—Fairfield (July 28, 1890); Duckville Gun Club, mouth of Bear River (June 7, 1916); Hansen's Island, mouth of Bear River (May 29, 1916); south shore of Great Salt Lake (June 11, 1869); Antelope Island, Great Salt Lake (June 4 and 5, 1869).

*Virginia*.—No more definite locality given (March, 1872).

*Wyoming*.—Laramie Peak (June, 1864).

*Lower California*.—Mouth of Colorado River (May 15, 1915); La Paz (March 12, 1912; Feb. 7, 1887); San Quintin (July 4, 1906); Abreojos Point (March 16, 1911); San José del Cabo (Aug. 26, 1887).

*Oaxaca*.—Near Juchitan (Dec. 11, 1868).

*San Luis Potosi*.—San Luis Potosi (Feb. 7, —).

*Tamaulipas*.—Matamoros (Feb. 11, 1909).

*Vera Cruz*.—Jalapa; Tlacotalpam (Feb. 10, 1901).

### ***Numenius americanus occidentalis* Woodhouse.**

*Numineus* [sic] *occidentalis* WOODHOUSE, Proc. Acad. Nat. Sci. Phila., 1852, p. 194 (near Albuquerque, New Mexico).

*Numenius americanus parvus* BISHOP, 'The Auk,' XXVII, No. 1, January, 1910, p. 59 (Crane Lake, Saskatchewan).

CHARS. SUBSP.—Similar to *Numenius americanus americanus*, but decidedly smaller, particularly the bill and wing.

MEASUREMENTS.<sup>1</sup>—Male: wing, 253.5–261 (average, 259) mm.; tail, 105–117 (112); exposed culmen, 106–145 (121); tarsus, 70–81 (74).

Female: wing, 252–275 (average, 266) mm.; tail, 104.5–116 (111); exposed culmen, 118–162 (147); tarsus, 73–88 (80).

TYPE LOCALITY.—Near Albuquerque, New Mexico.

GEOGRAPHIC DISTRIBUTION.—Southwestern Canada, the United States, Mexico, and Jamaica. Breeds north to southern Manitoba, southern Saskatchewan, southern Alberta, and southern British Columbia; west to central southern British Columbia, middle Oregon, and central northern

<sup>1</sup> Transposed into millimeters from the measurements given by Dr. Louis B. Bishop, in 'The Auk,' No. 1, January, 1910, p. 60.

California; south to northeastern California, central western Nevada (probably), southeastern Oregon, northern Idaho, southwestern Montana, central Wyoming, and northern South Dakota; east to northeastern South Dakota, eastern North Dakota, and central southern Manitoba. Winters in Mexico and the southern United States, north to central California, southern Arizona, southern Texas, southern Louisiana, Florida, and Georgia; and south to southern Lower California, Jalisco, and San Luis Potosi, Mexico. Migrates west to western Washington and western California, and east to Iowa; casually east to Rhode Island, New York, and South Carolina, and southeast to Jamaica.

*Remarks.*—This is a well differentiated subspecies, although its distinction rests entirely on size, the much shorter bill being one of the best and most readily appreciated characters. While typical specimens are easy to determine, geographic intermediates, such as occur in Wyoming and South Dakota, offer, as would be expected, sometimes difficult problems which are solvable only by average measurements or the average of characters present. An adult specimen taken at a nest near Fort Klamath, Oregon, on May 17, 1878, and now with a set of four eggs preserved in the United States National Museum, is apparently typical *Numenius americanus occidentalis*, and thus proves the southward extension of the breeding range of this form, as far at least as extreme northeastern California. It is probable that the curlews that breed in the lakes of the Carson Valley of central western Nevada, although not examined in this connection, are also of this race. No specimens of *Numenius americanus occidentalis* from south of the State of Jalisco in Mexico have been seen, but it doubtless will be found at least nearly as far south as the typical subspecies, i. e., to southern Mexico, and possibly to Guatemala.

In describing this race as *Numenius americanus parvus*,<sup>1</sup> Dr. Louis B. Bishop rejected the name *Numenius occidentalis* Woodhouse because he assumed that it was evidently an immature individual of *Numenius americanus americanus*, basing this assumption largely on the premise that it must have been collected before August 1. As a matter of fact, however, the type of *Numenius occidentalis* Woodhouse was collected near Albuquerque, New Mexico, on Aug. 20, 1851, by Dr. S. W. Woodhouse. It was

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<sup>1</sup> 'The Auk,' XXVII, No. 1, January, 1910, p. 61.

deposited in the United States National Museum, where it was catalogued as No. 12644, and was subsequently mounted, but was unfortunately destroyed by mistake in March, 1888, along with a number of other supposedly worthless specimens. We have, however, a figure of the type specimen which was given by Woodhouse in his report on this collection;<sup>1</sup> and from this, together with the description and measurements given by Dr. Woodhouse,<sup>2</sup> it is evident that the bird is a representative of the small northern race subsequently described by Dr. Bishop as *Numenius americanus parvus*. These measurements are, in inches, as follows: wing, 11.50; bill, 4.20; tarsus, 2.80; middle toe, 1.35. That this individual should be found in New Mexico as early as Aug. 20 is by no means surprising or indicative of its identity with *Numenius americanus americanus*, since these birds are notoriously early migrants and move southward not infrequently in July. Examples of *Numenius americanus occidentalis* have been obtained in southern California on August 22, and on the island of Jamaica in July; while, as already noted,<sup>3</sup> *Numenius americanus americanus* sometimes reaches the Mexican Boundary as early as the middle of July. We are therefore under the unfortunate necessity of sinking Dr. Bishop's name, *Numenius americanus parvus*, as a synonym of *Numenius americanus occidentalis* Woodhouse.

*Specimens examined*.—We have seen 190 specimens of this subspecies, from the following localities:

*Alberta*.—Many Island Lake, near Walsh, June 18, 1906 [nestling and adult]; Walsh (July 12, 1906 [juv.]); Calgary (May 18, 1904); western Assiniboia (June 1, 1905).

*British Columbia*.—Vernon (July 20, 1892); Lac La Hache (June 29, 1892); Okanagan (July 22, 28, and 29, 1902; Oct. 29, 1902; July 14, 1911).

*Saskatchewan*.—Hay Creek, Maple Creek (July 3, 1906); Hay Lake (May 29, 1905); Maple Creek (June 11, 1906); Crane Lake, Maple Creek (June 17, 22, 23, and 26, 1906; June 17, 1907); Big Stick Lake, Maple Creek (July 18, 1906; June 13, 1906).

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<sup>1</sup> Sitgreaves' Rep. Zuni and Colorado Rivers, 1853, p. 98, pl. 6.

<sup>2</sup> Loc. cit., p. 98.

<sup>3</sup> *Antea*, p.

*Arizona*.—Near Naris, Pima County (Jan. 8, 1894); The Dam, Monument 179, Mexican Boundary Line (Feb. 9, 1894).

*California*.—Menlo (January, 1896); San Rafael (Jan. 6, 1883); Huntington Beach, Orange County (Aug. 22, 1915).

*Colorado*.—Larimer County (May 9, 1885); St. Charles River (Aug. 5, 1874); Denver Mills (Sept. 8, 1900).

*Florida*.—Gasparilla Pass (Feb. 5, 1884).

*Georgia*.—Sapelo Island (May 9, 1885).

*Iowa*.—No more definite locality given; Chariton (Mar. 21, —).

*Louisiana*.—Calcasieu Pass.

*Missouri*.—Bourbeuse River (Aug. 1, 1881).

*Montana*.—Pilgrim Creek, 10 miles northwest of Piniele (June 19, 1916); Pilgrim Creek, 6 miles northwest of Piniele (June 11, 1916); 5 miles southeast of Sykes (May 31, 1916); Bighorn River, 5 miles south of St. Xavier (May 31, 1917); Crazy Mountains, eastern foothills (June 21, 1917); 90 miles above mouth of Yellowstone River (July 28, 1856); Darnall's, Dawson County, 30 miles south of Glasgow (June 30, 1910); Mountain Sheep Buttes, 20 miles northwest of Colypso, Dawson County, (Aug. 9, 1909); near mouth of Milk River (July 31, 1874; June 30, 1874); mouth of Little Porcupine River (Aug. 8, 1875); Fort Benton; Powder River, 10 miles northeast of Broadus (June 19, 1916); Boxelder Creek, 10 miles northeast of Piniele (June 10, 1916); Boxelder Creek, 12 miles northeast of Piniele (June 10 and 19, 1916).

*Nebraska*.—No more definite locality given.

*New Mexico*.—Ten miles northwest of Capitan Mountains (Aug. 28, 1903); Mexican Boundary Line, Long. 30° 15', near Emory Monument 5 (Mar. 22, 1892).

*New York*.—Montauk Point.

*Oregon*.—Pendleton (June 6, 1896); Fort Klamath (shot at nest containing 4 eggs, May 7, 1878).

*Rhode Island*.—Jamestown (Sept. 9, 1897).

*South Carolina*.—Egg Bank, Ladies Island (May 27, 1867).

*South Dakota*.—Cheyenne River, Custer County (July 12, 1894); Spring Creek, Custer County (May 27, 1894).

*Texas*.—Nueces County; Sept. 14, 1912; Oct. 9, 10, 11, 19, 24, 25, and 26, 1912; Nov. 17, 19, 21, 22, 23, 25, 28, and 29, 1912);



Nueces Bay (April 5 and 12, 1889); Corpus Christi Bay (April 13, 1889); Brownsville (Dec. 11, 1888; May 16, 1877; Feb. 3, 1897; Nov. 20, 1896; Dec. 4, 5, 7, 9, 14, 15, 16, 18, 19, 21, and 22, 1909; Dec. 2, 1887; Nov. 8, 16, 19, and 27, 1909; Feb. 21, 1902; Jan. 6, 1899; Sept. 19, 22, 24, and 25, 1914; Sept. 8, 1893; Oct. 1, 2, 5, and 7, 1914); Cameron County (Oct. 7, 1913; Oct. 1, 1914); Point Isabel (Feb. 18, 1881); Fort Clark (Feb. 22, 1893); Fort Stockton (Aug. 30, 1877); Aransas County (Sept. 3, 5, 8, and 22, 1912); Corpus Christi (March 10, 1877; May 29, 1891; Feb. 12, 1899; Oct. 11 and 18, 1909).

*Utah*.—Fillmore (Nov. 19, 1872).

*Washington*.—Near Fort Steilacoom (Aug. 1, 1856); Fort Sanders.

*Wyoming*.—Little Box Elder Creek, Converse County (June 25, 1890; April 25, 1892); Crook County (June 14, 1904); Newcastle (May 22, 1894); Black Hills (Aug. 4, 1856); Main Fork, Medicine Bow River (Aug. 6 and 7, 1856).

*Chihuahua*.—Chuechupa (Sept. 16 and 17, 1905); Nuevo Casas Grandes (Sept. 4, 1901).

*Durango*.—Rancho Santuario (Feb. 22, 1903).

*Jalisco*.—La Barca (Jan. 8, 1903).

*Jamaica*.—Passage Fort (July, 1863).

*Lower California*.—Cape San Lucas (Sept. 15, 1859); La Paz; San José del Cabo (Sept. 19, 1887; February, 1860); San Lazaro Mountains (January, 1860); Magdalena Bay (March 21, 1911); San Quintin (July 7, 1906).

*San Luis Potosi*.—San Luis Potosi (March 3, —).

*Tamaulipas*.—Matamoros (Jan. 23, 1909).

A NEW SPECIES OF LOON (*GAVIA VIRIDIGULARIS*)  
FROM NORTHEASTERN SIBERIA.

BY JONATHAN DWIGHT, M. D.

THERE has been a good deal of confusion regarding the status of the Black-throated Loon (*Gavia arctica*) and its allies. Two instances may be cited. Hartert states that "According to Buturlin both *G. arctica* and *G. pacifica* are found breeding side by side in areas of thousands of miles. We cannot therefore treat them as geographical forms of one species" (Hand-List of British Birds, 1912, p. 159), and Hersey in his recent review of this species says that "three Alaskan specimens when compared with available material from Siberia and northern Europe prove to be the Asiatic form *Gavia arctica suschkini* Sarudny, and not *Gavia arctica arctica* (Linnaeus)" (Auk, XXXIV, July 1917, p. 289). Mr. Hersey informs me that his birds have green throats, but as a matter of fact, *suschkini* is a purple-throated bird and undoubtedly a race of *arcticus* as claimed by the describer, N. A. Sarudny. For the benefit of those who do not read Russian, wherein much of the present tangle lies, I have obtained a translation of the original description kindly made by my friend Mr. Roman de Majewski. It appeared in a Moscow journal which bears a title in three languages, Russian, French and German, and the citation therefore is [Russian], = *Messenger ornithologique*, = *Ornithologische Mittheilungen*, 3rd year, 1912, No. 2, pp. 111-113, being a continuation of N. A. Sarudny's "[Russian title=] *Mittheilungen über die Ornithologie von Turkestan*."

142. *Urinator arcticus suschkini* subsp. nov.

The Striped Diver is to be found in Russian Turkestan during migration, and in winter-time. To judge by the specimens I have collected, they show such divergence from the types of the Pskovskoi and St. Petersburg provinces that in my opinion they should not be given the name *Urinator arcticus* (Linn.) but placed in a separate category.

From among the specimens of the Striped Diver which I have collected I will only cite the adults:

1. ? ♀ Near Amu — Daryi, Feb. 2, 1907.
2. ♀ Near Kok — Boowak, Nov. 4, 1907.
3. ♂ Kasalinsk, April 16, 1908.
4. ♂ Lake Chushka — Kool (near Turkestan City) June 10, 1908.
5. ♀ Lake Chushka — Kool (near Turkestan City) June 10, 1908.
6. ♂ At the source of the River Tar — Toogi, Dec. 22, 1909.
7. ? ♂ Nijni — Tcherchik, Winter 1909-10.
8. ? ♀ Boowaki, on the lower heights of Koorataou, Spring 1911.
9. ♂ Joolek, Baiga — Kum, March 28, 1911.

The divergences are the following: The gray color of the crown and the back of the neck of the Turkestan bird is lighter, though not quite as light as in *Urinator pacificus* Lawr. The explanation of this should not be sought for in moulting, as one might be led to expect by specimen No. 1, which is in process of changing its winter plumage for its summer one. In specimens Nos. 2, 6, and 7, we can notice very clearly that the parts above-mentioned are also lighter. The white horizontal bars on the shoulders and on the back are in most cases wider, even comparing the small Turkestan birds with the large Pskovkoi and St. Petersburg types. Also in most cases the white spots on the wings are larger. The front part of the neck seems to be darker and its purple sheen less developed.

In the greater number of cases our birds are smaller and their beaks are shorter. These two observations were already made by Mr. P. P. Suschkin (Birds of the Ufinskoi Region.— Birds of the Middle Kirgiz Steppes.) in the cases of Divers from the Ural and Turkestan regions. In my specimens the length of the wings and culmen are as follows:

|    | Wing  | Culmen. |
|----|-------|---------|
| 1. | 11,6  | 2,3     |
| 2. | 12,2  | 2,25    |
| 3. | 12,23 | 2,32    |
| 4. | 12,35 | 2,2     |
| 5. | 12,1  | 2,26    |
| 6. | 12,5  | 2,6     |
| 7. | 12,12 | 2,35    |
| 8. | 12,7  | 2,3     |
| 9. | 11,8  | 2,27    |

(In typical *U. arcticus*, the length of the wing varies between 12,15" and 13,2", and the culmen between 2,5 and 2,85. In *U. pacificus* the wing is 11,2"-12,25" and the culmen 2"-2,35".)

The extremity of the beak in the Turkestan Diver, is shorter and higher

in proportion, compared to the Northern ones; the gonys, in most cases forms a sharper angle.

This notice about the Diver I dedicate to P. P. Suschkin.

It is quite obvious from the foregoing translation that *suschkini* is merely slightly differentiated from the purple-throated *Gavia arctica* and as *pacificus* is also a like variation, it follows that the green-throated birds are without a name, for the synonyms of *arctica* refer without exception to European birds. My attention was first directed to the Siberian\* birds some years ago by Dr. L. B. Bishop when we were examining skins of Loons at the American Museum of Natural History. I propose for them the following name:—

***Gavia viridigularis* sp. nov.**

TYPE.—No. 76665, American Museum of Natural History; adult male; Gichega (or Ghijiga) northeastern Siberia; September 16, 1894; collected by N. G. Buxton.

DIAGNOSIS.—The green coloration of the throat is the essential character that sets this species apart from *arctica* and its races, which all have purple throats.

DESCRIPTION OF TYPE.—Top of head smoke gray, paler and drab-tinged on nape, sides of head darker and purplish, rest of upper surface a slightly lustrous greenish-black, the scapulars with twelve to fourteen broad (6–7 min.) white bars of quadrate spots, the sides of the hind neck with ten or twelve similar though narrower bars and the outer surface of the wings with small semi-ovate white spots. The throat is a velvety dusky olive-green if held towards the light and an olivaceous black with slight purplish tints if held away from it; the upper part of the throat and the chin are a darker green much like the back. The throat is bordered by narrow white stripes enclosing broader stripes of black and it is crossed at its upper part by about ten short white longitudinal stripes; numerous narrow black and white streaks radiate from its lower border along the sides of the jugulum. The wing quills, the tail, the under tail coverts, the tibiae, and an obscure line across the anal region are dusky. The lining of the wing is white. The bill in dried skins is a dull grayish-black, and the feet are black. Measurements (in millimeters) — wing 322, tail 59, tarsus 90, toe with claw 115, culmen 69, depth of bill 17.

The sexes are alike in plumage but the female is slightly smaller. Average of two males, wing 321, tail 59.5, tarsus 88, toe with claw 108.5, culmen 68, depth of bill 18:—average of five females, wing 316, tail 58.2, tarsus 82.6, toe with claw 101.6, culmen 64, depth of bill 17.

RANGE.—Northeastern Siberia and extreme western Alaska.

The Green-throated or Siberian Loon may prove to be only subspecifically separable from its purple-throated relative, the Black-throated or Arctic Loon, but there seems to be a distinct qualitative difference between the green and the purple of the respective throats, that merits specific recognition. Except for this striking difference *viridigularis* and *arctica* are much alike in coloration, although the former has wider white bars on the scapulars and the upper parts are green-tinged rather than purplish as in *arctica*; the former too is, perhaps, a little larger in all dimensions. Specimens of *arctica* no matter how they are held to the light show a velvety purple on the throat that looks black in a poor light, while those of *viridigularis* are wholly green when held between the observer and the light and they develop a tinge of brownish-purple only if held in the opposite direction. I have seen one or two specimens that are somewhat intermediate between the two species but there is a gap that remains to be bridged.

We have then *Gavia arctica arctica* the northern European bird with *Gavia arctica suschkini*, a southern race in Turkestan and *Gavia arctica pacifica* its representative in Arctic North America,—all three purple-throated, and *Gavia viridigularis* a green-throated species that occupies a range in eastern Siberia. Buturlin as quoted may have mistaken *viridigularis* for *pacifica* which would account for his "*arcticus*" and "*pacificus*" breeding side by side, but however this may be, we have to reckon with a green-throated bird that hitherto has been without a name.



### THIRD ANNUAL LIST OF PROPOSED CHANGES IN THE A. O. U. CHECK-LIST OF NORTH AMERICAN BIRDS.

BY HARRY C. OBERHOLSER.

THIS is the Third Annual List of proposed A. O. U. Check-List additions and changes in the names of North American birds. Like the First and Second,<sup>1</sup> the present list comprises only ornithological cases,—*i. e.*, such as require specimens or the identification of descriptions for their determination, and consists of additions, eliminations, rejections, and changes of names due to various causes. However, only changes known to be based on revisionary work are included; therefore no mention is here made of changes involved in names used without sufficient explanation in local lists or elsewhere.

This list is intended to include everything pertinent up to December 31, 1917, and nothing after that date has been taken. In view of the volume and widely scattered character of current ornithological literature, it is not at all unlikely that some names have been overlooked, and the writer would be very thankful for references to any omissions, in order that such may be duly given a place in next year's list. For assistance of this kind relating to the present list, the author is indebted to Mr. F. Seymour Hersey, Dr. Charles W. Richmond, and Mr. J. H. Riley.

***Fratercula arctica arctica*** (Linnaeus) becomes, in so far as North America is concerned, ***Fratercula arctica deleta*** (Brünnich). *Alca deleta* Brünnich, Ornith. Borealis, 1764, p. 25 (Iceland). (Cf. Hartert, British Birds, XI, No. 7, Dec. 1, 1917, pp. 163-166.)

†***Coprotheres*** Reichenbach, Natürl. Syst. Vögel, 1852 (1853), p. V (type, *Lestris pomarina* Temminck). Recognized as a genus. (Cf. Mathews, Birds Australia, II, pt. 5, Jan. 31, 1913, p. 497.) Includes the following North American forms now in the genus *Stercorarius*:

***Coprotheres pomarinus pomarinus*** (Temminck).

***Coprotheres pomarinus camtschaticus*** (Pallas).

†***Coprotheres pomarinus camtschaticus*** (Pallas). *Catarractes camtschatica* Pallas, Zoogr. Rosso-Asiat., II, 1826, p. 312 (Kamchatka).

<sup>1</sup> For the two previous lists, see The Auk, XXXIII, October, 1916, pp. 425-431; XXXIV, April, 1917, pp. 198-205.

† Additions to the A. O. U. Check-List, the Sixteenth Supplement and the First and Second Annual Lists of Proposed Changes, are marked with a dagger (†).

Recognized as a subspecies to include birds breeding in Alaska and Siberia. (Cf. Mathews, *Birds Australia*, II, pt. 5, Jan. 31, 1913, p. 498.)

**Pagophila alba** (Gunnerus) becomes **Pagophila eburnea** (Phipps) (*Larus eburneus* Phipps, *Voy. North Pole*, Append., 1774, p. 187), because *Larus albus* Gunnerus is not certainly identifiable. (Cf. B. O. U. Committee, *List Brit. Birds*, ed. 2, 1915, p. 394.)

**Larus thayeri** Brooks becomes **Larus argentatus thayeri** Brooks, because of intergradation with *Larus argentatus*. (Cf. Dwight, *The Auk*, XXXIV, No. 4, Oct., 1917, pp. 413-414.)

†**Larus ridibundus** Linnæus, *Syst. Nat.*, ed. 12, I, 1766, p. 225 (Europe). Recorded from a specimen taken on the western coast of Greenland. (Cf. Schiøler, *Dansk Ornith. For. Tidssk.*, XI, Hæfte 3-4, Sept., 1917, p. 175.)

**Larus affinis** Reinhardt becomes **Larus fuscus affinis** Reinhardt. (Cf. Iredale, *Bull. Brit. Ornith. Club*, XXXI, No. CLXXXVI, March 29, 1913, pp. 68-69.)

**Larus atricilla** Linnæus becomes **Larus atricilla megalopterus** (Bruch) (*Atricilla megalopterus* Bruch, *Journ. f. Ornith.*, 1855, p. 287; Peru and Mexico), by recognition of the North American birds as subspecifically distinct. (Cf. Noble, *Bull. Mus. Comp. Zool.*, LX, No. 10, Aug., 1916, p. 367.)

†**Calonectris** Mathews and Iredale. New genus. Mathews and Iredale, *Ibis*, ser. 10, III, No. 3, July 2, 1915, pp. 590, 592 (type, *Puffinus leucomelas* Temminck). (Cf. Mathews and Iredale, *Ibis*, 1915, pp. 590-594; Oberholser, *The Auk*, XXXIV, No. 4, Oct., 1917, pp. 471, 475.) Of North American species it includes only *Puffinus kuhlii borealis* Cory, which therefore becomes:

**Calonectris kuhlii borealis** (Cory).

†**Ardenna** Reichenbach, *Natürl. Syst. Vögel*, 1852 (1853), p. IV (type, *Procellaria major* Faber = *Procellaria gravis* O'Reilly). Revived as a genus (cf. Mathews and Iredale, *Ibis*, 1915, pp. 590-591; and Oberholser, *The Auk*, XXXIV, No. 4, Oct., 1917, pp. 471, 475); and will include the following North American species now in the genus *Puffinus*:

**Ardenna carneipes** (Gould).

**Ardenna creatopus** (Coues).

**Ardenna gravis** (O'Reilly).

†**Hemipuffinus** Iredale, *Austral Avian Record*, II, No. 1, Aug. 2, 1913, p. 20 (type, *Puffinus carneipes* Gould). Proposed (loc. cit.) as a genus to include *Puffinus carneipes* Gould. Accepted as only a subgenus of *Ardenna* Reichenbach. (Cf. Oberholser, *The Auk*, XXXIV, No. 4, Oct., 1917, p. 471.)

**Puffinus assimilis** Gould becomes **Puffinus assimilis godmani** Allen. *Puffinus godmani* Allen, *The Auk*, XXV, No. 3, July, 1908, p. 339 (Madeira). (Cf. Hartert, *British Birds*, VIII, No. 12, May 1, 1915, pp. 282-283; IX, No. 2, July 1, 1915, p. 56.)

†**Thyellodroma** Stejneger, Proc. U. S. Nat. Mus., XI, Nov. 8, 1888, p. 93 (type, *Puffinus sphenurus* Gould). Recognized as a genus (cf. Mathews and Iredale, Ibis, 1915, pp. 596-600; Oberholser, The Auk, XXXIV, No. 4, Oct., 1917, pp. 471-472). Includes the following species now in the genus *Puffinus*:

**Thyellodroma cuneata** (Salvin).

**Thyellodroma bulleri** (Salvin).

**Puffinus pacificus alleni** Mathews becomes **Thyellodroma cuneata** (Salvin). (Cf. Mathews and Iredale, Ibis, 1915, p. 600.)

**Prifinus cinereus** (Gmelin) becomes **Procellaria cinerea** Gmelin, because not generically distinct from **Procellaria æquinoctialis**. (Cf. Mathews, Birds Australia, II, pt. 1, May 30, 1912, p. 106.)

†**Æstrelata diabolica** (Lafresnaye). *Procellaria diabolica* Lafresnaye, Rev. Zool., 1844, p. 168 (Guadeloupe Island, West Indies). Records of *Æstrelata hasitata* from several localities in the eastern United States prove to belong to this species. (Cf. Noble, Bull. Mus. Comp. Zool., LX, No. 10, Aug., 1916, pp. 370-374.)

**Pelagodroma marina** (Latham) becomes **Pelagodroma marina hypoleuca** (Moquin-Tandon) (*Thalassidroma hypoleuca* Moquin-Tandon, in Webb, Berthelot, and Moquin-Tandon, Orn. Canarienne, 1841, p. 45; Tenerife, Canary Islands), by recognition of an Atlantic subspecies. (Cf. Bannerman, Ibis, 1914, pp. 61-62.)

†**Oceanodroma hornbyi** (Gray). *Thalassidroma hornbyi* Gray, Proc. Zool. Soc. Lond., 1853 (July 25, 1854), p. 62 (northwest coast of America). Restored to the list of North American birds. (Cf. Oberholser, The Auk, XXXIV, No. 4, Oct., 1917, p. 466.)

†**Oceanodroma leucorhoa beali** Emerson. *Oceanodroma beali* Emerson, Condor, VIII, No. 2, March 20, 1906, p. 54 (Sitka Bay, Alaska). Revived as a species (cf. Willett, Condor, XVI, No. 2, March 15, 1915, p. 75); recognized as a subspecies of *Oceanodroma leucorhoa* (cf. Oberholser, Proc. U. S. Nat. Mus., LIV, Oct. 19, 1917, p. 168).

**Oceanodroma socorroensis** Townsend becomes **Oceanodroma monorhis socorroensis** Townsend. (Cf. Mathews and Iredale, Ibis, 1915, p. 580.)

†**Leptophaethon** Mathews. New genus. Mathews, Austral Avian Record, II, Nos. 2-3, Oct. 23, 1913, p. 56 (type, *Phaethon lepturus dorothea* Mathews). Includes only one North American species, now in the genus *Phaethon*:

**Leptophaethon catesbyi** (Brandt).

†**Scaophaethon** Mathews. New genus. Mathews, Austral Avian Record, II, Nos. 2-3, Oct. 23, 1913, p. 56 (type, *Phaethon rubricauda westralis* Mathews). Includes only one North American species now in the genus *Phaethon*:

**Scaophaethon rubricaudus** (Boddart).<sup>1</sup>

†**Piscatrix** Reichenbach, Natürl. Syst. Vogel, 1852 (1853), p. VI (type,

<sup>1</sup> See Second Annual List, 'The Auk,' XXXIV, 1917, p. 199.

*Sula candida* Stephens = *Pelecanus sula* Linnæus). Recognized as a genus. (Cf. Mathews, Birds Australia, IV, pt. 3, June 23, 1915, p. 199). Includes one species now in the genus *Sula*:

**Piscatrix sula** (Linnæus).

**Sula piscator** (Linnæus) becomes **Piscatrix sula** (Linnæus), since the latter proves to be identical with the bird currently known as *Sula piscator*. (Cf. Mathews, Birds Australia, IV, pt. 3, June 23, 1915, pp. 206-209.)

†**Parasula** Mathews. New genus. Mathews, Austral Avian Record, II, Nos. 2-3, Oct. 23, 1913, p. 55 (type, *Sula dactylatra bedouti* Mathews). Includes the following North American species now in the genus *Sula*:

**Parasula cyanops cyanops** (Sundevall).

**Parasula nebouxii** (Milne-Edwards).

†**Morus** Vieillot, Analyse Nouv. Ornith. Élément., 1816, p. 63 (type, *Pelecanus bassanus* Linnæus). Recognized as a genus. (Cf. Mathews, List Birds Australia, 1913, p. 98; Birds Australia, IV, pt. 3, June 23, 1915, p. 217). The only North American species is now in the genus *Sula* and will therefore stand as:

**Morus bassanus** (Linnæus).

**Phalacrocorax carbo** (Linnæus) becomes **Phalacrocorax carbo americanus** (Reichenbach) (*Graculus americanus* Reichenbach, Novit. Synop. Avium, Natatores, Dec., 1850, p. [3], pl. CCCL [= Novit. LXXXVII = XXXV\*]; North America), by recognition of the North American bird as a distinct subspecies. (Cf. Mathews, Birds Australia, IV, pt. 2, Feb. 17, 1915, p. 171.)

**Fregata aquila** (Linnæus) becomes **Fregata magnificens rothschildi** Mathews (*Fregata minor rothschildi* Mathews, Birds Australia, IV, pt. 3, June 23, 1915, p. 280; Aruba Island, Caribbean Sea), since *Fregata aquila* (Linnæus) proves to be extralimital. (Cf. Oberholser, The Auk, XXXIV, No. 4, Oct., 1917, pp. 468-469.)

†**Fregata minor palmerstoni** (Gmelin). *Pelecanus palmerstoni* Gmelin, Syst. Nat., I, ii, 1789, p. 573 (Palmerston Island, Pacific Ocean). Revived by Mathews (Austral Avian Record, III, No. 6, Dec. 19, 1914, p. 119; Birds Australia, IV, pt. 3, June 23, 1915, p. 280), for the bird of the central Pacific Ocean. Occurs also northeast to California. (Cf. Oberholser, The Auk, XXXIV, No. 4, Oct. 1917, p. 469).

†**Anas rubripes tristis** Brewster, The Auk, XXVI, No. 2, April, 1909, p. 176 (new name for *Anas obscura* Gmelin). Reinstated as a subspecies. (Cf. Oberholser, The Auk, XXXIV, No. 2, April, 1917, pp. 192-194.) Range: northeastern United States to central Quebec and coast of Labrador; in winter south to the Gulf of Mexico.

†**Erismaturinæ**. Revived as a subfamily. (Cf. Mathews, Birds Australia, IV, pt. 1, Oct. 6, 1914, p. 8.) Includes the North American genera *Erismatura* Bonaparte and *Nomonyx* Ridgway.

†**Dendrocygninæ**. New subfamily. Shufeldt, Zool. Jahrb. (Abth. f. Systematik), XXXVIII, 1914, pp. 1-70, pls. I-XVI. Includes the genus *Dendrocygna* Swainson.

**Branta bernicla glaucogastra** (Brehm) becomes **Branta bernicla** (Linnæus); since *Branta bernicla glaucogastra* is only a dimorphic variety. Furthermore, *Bernicla glaucogaster* Brehm (Handb. Naturg. Vög. Deutschl., 1831, p. 849) applies to the form now called *Branta bernicla bernicla*; so that were the race now known as *Branta bernicla glaucogastra* recognizable as a subspecies it would have to stand as *Branta bernicla collaris* (Brehm) (*Bernicla collaris* Brehm, Handb. Naturg. Vög. Deutschl., 1831, p. 851; Coasts of Pomerania). (Cf. Hartert, Scottish Naturalist, No. 64, April, 1917, pp. 75-76.)

**Ardea herodias occidentalis** Audubon becomes **Ardea occidentalis** Audubon, because considered a distinct species. (Cf. Bartsch, The Auk, XXXIV, No. 1, Jan., 1917, p. 86.)

†**Ardea herodias wardi** Ridgway. Reinstated as a tenable subspecies, because considered specifically distinct from *Ardea occidentalis* Audubon. (Cf. Todd, Annals Carnegie Mus., X, Jan., 1916, pp. 177-178; Bartsch, The Auk, XXXIV, No. 1, Jan., 1917, p. 86.)

**Egretta candidissima** (Gmelin) becomes **Egretta thula thula** (Molina). *Ardea thula* Molina, Sagg. Stor. Nat. Chili, 1782, p. 235 (Chile). The North American races will therefore need to be called:

**Egretta thula thula** (Molina).

**Egretta thula brewsteri** Thayer and Bangs.

†**Limnogeranus** Sharpe, Bull. Brit. Orn. Club, I, No. VII, 1893, p. xxxvii (type, *Ardea americana* Linnæus). Recognized as a genus to include *Grus americana* (Linnæus). (Cf. Brasil, Genera Avium, XIX, 1913, p. 4), which therefore becomes:

**Limnogeranus americanus** (Linnæus).

**Grus mexicana** (Müller) becomes **Grus canadensis mexicana** (Müller). (Cf. Brasil, Genera Avium, XIX, 1913, p. 4.)

†**Erolinæ**. Recognized as a subfamily of Scolopacidae for genera allied to *Pelidna*. (Cf. Lowe, Ibis, 1915, pp. 609-616.)

†**Tringinae**. Recognized as a subfamily of Scolopacidae for genera allied to *Totanus*. (Cf. Lowe, Ibis, 1915, pp. 609-616.)

**Pisobia damacensis** (Horsfield) becomes **Pisobia minutilla subminuta** (Middendorff) (*Tringa subminuta* Middendorff, Reis. Siber., Zool., 1851, p. 222; western slope of Stanovoi Mts., and Uda River, southeastern Siberia), since it is a subspecies of *Pisobia minutilla*, and since the name (*Pisobia damacensis*) Horsfield is a synonym of *Pisobia ruficollis* (Pallas) and thus unavailable for the bird now known as *Pisobia damacensis*. (Cf. Hartert, Novit. Zool., XXIII, 1916, pp. 92-93.)

†**Erolia ferruginea chinensis** (Gray). *Tringa (Pelidna) chinensis* Gray, Zool. Miscell., 1831, p. 2 (China). Alaskan records of this species belong under this newly recognized subspecies. (Cf. Mathews, Birds of Australia, III, pt. 3, Aug. 18, 1913, pp. 266-268.)

†**Vetola** Mathews. New genus. Mathews, Birds Australia, III, pt. 2, May 2, 1913, p. 191 (type, *Scolopax lapponica* Linnæus). Includes the following North American species now in the genus *Limosa*:



**Vetola lapponica baueri** (Naumann).

**Vetola hæmastica** (Linnæus).

**Calidris leucophæa** (Pallas) becomes **Calidris leucophæa rubida** (Gmelin) (*Charadrius rubidus* Gmelin, Syst. Nat., I, ii, 1789, p. 688; Hudson Bay, Canada), by recognition of a North American subspecies. (Cf. Mathews, Birds Australia, III, pt. 3, Aug. 18, 1913, p. 244.)

**Totanus melanoleucus** (Gmelin) becomes **Glottis melanoleuca** (Gmelin), because not generically separable from *Glottis nebularia*. (Cf. Mathews, Birds Australia, III, pt. 2, May 2, 1913, pp. 197-198; pt. 3, Aug. 18, 1913, p. 224.)

†**Iliornis** Kaup, Skizz. Entwick.-Gesch. Eur. Thierw., 1829, p. 156 (type, *Totanus stagnatilis* Bechstein). Recognized as a genus. (Cf. Mathews, Birds Australia, III, pt. 2, May 2, 1913, pp. 197-199.) Includes one North American species now in the genus *Totanus*:

**Iliornis flavipes** (Gmelin).

†**Phæopus** Cuvier, Règne Animal, I, 1816, p. 485 (type, *Scolopax phæopus* Linnæus). Recognized as a genus. (Cf. Mathews, Birds Australia, III, pt. 2, May 2, 1913, pp. 167-169.) Includes the following North American species now in the genus *Numenius*:

**Phæopus hudsonicus** (Latham).

**Phæopus borealis** (Forster).

**Phæopus phæopus phæopus** (Linnæus).

**Phæopus tahitiensis** (Gmelin).

†**Numenius arquatus** (Linnæus). *Scolopax arquata* Linnæus, Syst. Nat., ed. 10, I, 1758, p. 145 (Sweden). Recorded from specimens taken on the eastern and western coasts of Greenland. (Cf. Helms, Dansk. Ornith. For. Tidssk., XI, Hæfte 3-4, Sept., 1917, p. 173.)

**Ægialitis** Boie becomes **Charadrius** Linnæus, because considered not generically separable. (Cf. Hartert and Jackson, Ibis, 1915, pp. 526-527.) Consequently the North American species of *Ægialitis* will now stand as:

**Charadrius semipalmatus** Bonaparte.

**Charadrius hiaticula septentrionalis** (Brehm).

**Charadrius melodus** Ord.

**Ægialitis hiaticula major** (Seebohm) becomes **Charadrius hiaticula septentrionalis** Brehm. *Ægialitis septentrionalis* Brehm, Naturg. Vög. Deutschl., 1831, p. 548 (Iceland). (Cf. Schiøler, Dansk Ornith. For. Tidssk., IX, Hæfte 2-3, March, 1915, p. 181.)

†**Ægialeus** Reichenbach, Natürl. Syst. Vögel, 1852 (1853), p. XVIII (type, *Charadrius semipalmatus*). Recognized as a subgenus to include *Charadrius semipalmatus* Bonaparte. (Cf. Mathews, Birds Australia, III, pt. 2, May 2, 1913, p. 124.)

†**Cirrepidesmus** Bonaparte, Compt. Rend. Acad. Sci., XLIII, 1856, p. 417 (type, *Charadrius pyrrhotorax* Gould = *Charadrius atrifrons* Wagler). Recognized as a genus. (Cf. Mathews, Birds Australia,

III, pt. 1, April 2, 1913, pp. 81-84.) Its only North American species, now in the genus *Ægialitis*, is:

***Cirrepidesmus mongolus* (Pallas).**

†***Leucopoli*** Bonaparte, Compt. Rend. Acad. Sci., XLIII, 1856, p. 417 (type, *Charadrius marginatus* Vieillot). Recognized as a genus. (Cf. Mathews, Birds Australia, III, pt. 2, May 2, 1913, pp. 108-115). Includes only one North American species, which is now in the genus *Ægialitis*:

***Leucopoli* *alexandrinus nivosus* (Cassin).**

***Ægialitis nivos*** (Cassin) becomes ***Leucopoli* *alexandrinus nivosus*** (Cassin), because only subspecifically different from *Leucopoli* *alexandrinus*. (Cf. Mathews, Birds Australia, III, pt. 2, May 2, 1913, p. 114; Hartert and Jackson, Ibis, 1915, pp. 527-528.)

†***Elseya*** Mathews. New genus. Mathews, Birds Australia, III, pt. 2, May 2, 1913, p. 125 (type, *Charadrius melanops* Vieillot). Includes one North American species now in the genus *Ægialitis*:

***Elseya dubia* (Scopoli).**

***Jacana spinosa* (Linnaeus)** becomes ***Jacana spinosa gymnostoma*** (Wagler) (*Parra gymnostoma* Wagler, Isis, 1832, p. 517; Mexico), by recognition of the Mexican bird as distinct from that of Central America. (Cf. Todd, Annals Carnegie Mus., X, Jan., 1916, pp. 219-220.)

†***Jacana spinosa violacea* (Cory).** *Parra violacea* Cory, Bull. Nuttall Ornith. Club, VI, No. 3, July, 1881, p. 130 (Haiti). Recognized as a subspecies for the West Indian representatives of *Jacana spinosa*, with which Florida birds are identical. (Cf. Todd, Annals Carnegie Mus., X, Jan., 1916, pp. 217-220.)

†***Lophortyx californica catalinensis*** Grinnell. *Lophortyx catalinensis* Grinnell, The Auk, XXIII, No. 3, July, 1906, p. 262 (Avalon, Santa Catalina Island, California). Reinstated as a subspecies. (Cf. Oberholser, The Auk, XXXIV, No. 2, April, 1917, p. 194.) Range: Santa Catalina Island, California.

†***Pediocetes phasianellus jamesi*** Lincoln. New subspecies. Lincoln, Proc. Biol. Soc. Wash., XXX, May 23, 1917, p. 84 (three miles west of Castle Rock, Colo.). Range: foothills of Rocky Mountains from Colorado to Wyoming.

***Circus hudsonius* (Linnaeus)** becomes ***Circus cyaneus hudsonius*** (Linnaeus). (Cf. Hartert, Vögel paläarkt. Fauna, Heft IX [Band II, Heft 3], Oct., 1914, p. 1142.)

***Astur atricapillus* (Wilson)** is considered a subspecies of the European *Astur gentilis* (Linnaeus) (= *Astur palumbarius* [Linnaeus]). (Cf. Hartert, Vögel. paläarkt. Fauna, Heft. IX [Band II, Heft 3], Oct., 1914, p. 1151.) The American races of this species will, therefore, now stand as:

***Astur gentilis atricapillus* (Wilson).**

***Astur gentilis striatulus* Ridgway.**

†**Buteo borealis umbrinus** Bangs, Proc. New Engl. Zoöl. Club, II, July 31, 1901, p. 68 (Myakka, Manatee Co., Florida). Revived as a subspecies. (Peters, Bull. Mus. Comp. Zoöl., LXI, No. 11, Oct., 1917, p. 400.) Range: Florida, Cuba, and Isle of Pines.

†**Buteo platypterus iowensis** B. H. Bailey. New subspecies. Bailey, The Auk, XXXIV, No. 1, Jan., 1917, p. 73 (Eagle Lake, Hancock County, Iowa.)

†**Tachytriorchis** Kaup. Recognized as a genus (Cf. Chubb, Birds Brit. Guiana, I, 1916, p. 231). Contains one North American species now in the genus *Buteo*:

**Tachytriorchis albicaudatus sennetti** (Allen).

†**Buteola** Bonaparte. Recognized as a genus. (Cf. Chubb, Birds Brit. Guiana, I, 1916, p. 236.) *Buteo brachyurus* Vieillot therefore becomes:

**Buteola brachyura** (Vieillot).

†**Haliaetus albicilla brooksi** Hume. *Haliaetus brooksi* Hume, Ibis, ser. 2, VI, No. XXIII, July, 1870, p. 438 (Upper India). Alaskan specimens of *Haliaetus albicilla* belong to this race. (Cf. Clark, Proc. U. S. Nat. Mus., XXXVIII, April 30, 1910, p. 57.)

†**Rhynchodon** Nitzsch. Recognized as a genus. (Cf. Mathews, List Birds Australia, 1913, p. 111; Birds Australia, V, pt. 2, Feb. 29, 1916, pp. 223-224.) Includes three North American forms now in the genus *Falco*:

**Rhynchodon peregrinus peregrinus** (Tunstall).

**Rhynchodon peregrinus anatum** (Bonaparte).

**Rhynchodon peregrinus pealei** (Ridgway).

†**Tinnunculus** Vieillot. Recognized as a genus. (Cf. Mathews, Birds Australia, V, pt. 2, Feb. 29, 1916, pp. 223-224.) Includes the following North American forms now in the genus *Falco*:

**Tinnunculus columbarius columbarius** (Linnaeus).

**Tinnunculus columbarius suckleyi** (Ridgway).

**Tinnunculus columbarius richardsonii** (Ridgway).

**Tinnunculus columbarius æsalon** (Tunstall).

**Falco æsalon** Tunstall becomes **Tinnunculus columbarius æsalon** (Tunstall), by reason of subspecific relationship with *Tinnunculus columbarius*. (Cf. Hartert, Jourdain, Ticehurst and Witherby, British Birds, IX, No. 1, June 1, 1915, pp. 5-6.)

†**Rhynchofalco** Ridgway. Recognized as a genus. (Cf. Mathews, Birds Australia, V, pt. 2, Feb. 29, 1916, p. 223.) Includes one species now in the genus *Falco*:

**Rhynchofalco fuscocœrulescens septentrionalis** (Todd).

**Asio wilsonianus** (Lesson) becomes **Asio otus wilsonianus** (Lesson). (Cf. Hartert, Vögel paläarkt. Fauna, Heft VIII, [Band II, Heft 2], August, 1913, p. 987.)

**Speotyto cunicularia floridana** Ridgway becomes **Speotyto floridana** Ridgway. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 814, 820.)

**Glaucidium hoskinsi** Brewster becomes **Glaucidium gnoma hoskinsii** Brewster. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, p. 788.)

†**Coccyzus minor nesiotes** (Cabanis and Heine). *Coccygus nesiotes* Cabanis and Heine, Mus. Hein., IV, Heft 1, November, 1862, p. 78, footnote (Greater Antilles and Florida). Recorded from Florida. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VII, May 5, 1916, p. 27.)

†**Sphyrapicus thyroideus nataliae** (Malherbe). *Picus nataliae* Malherbe, Journ. f. Ornith., II, No. 8, March, 1854, p. 171 (Mexico). Revived as a subspecies. (Cf. Swarth, Condor, XIX, No. 2, March 15, 1917, p. 63). Range: Montana to Arizona, wintering south to Jalisco, Mexico.

†**Centurus uropygialis brewsteri** Ridgway, Proc. Biol. Soc. Wash., XXIV, Feb. 24, 1911, p. 32 (Santiago, southern Lower California). Recognized as a subspecies. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, p. 96). Range: southern Lower California.

**Colaptes rufipileus** Ridgway becomes **Colaptes cafer rufipileus** Ridgway. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, p. 37.)

**Chordeiles virginianus** (Gmelin) becomes **Chordeiles minor** (Forster) (*Caprimulgus minor* Forster, Cat. Anim. North Amer., 1771, p. 13; Virginia), since the latter has the same basis and is of earlier date. (Cf. Richmond, The Auk, XXXIV, No. 1, Jan. 1917, p. 88.) The North American races of *Chordeiles virginianus* therefore will stand as follows:

**Chordeiles minor minor** (Forster).

**Chordeiles minor hesperis** Grinnell.

**Chordeiles minor sennetti** Coues.

**Chordeiles minor howelli** Oberholser.

**Chordeiles minor henryi** Cassin.

**Chordeiles minor aserriensis** Cherrie.

**Chordeiles minor chapmani** Coues.

†**Myiarchus crinitus residuus** Howe, Contrib. North Amer. Ornith., I, May 21, 1902, p. 30 (Istokpoga Lake, Florida). Reinstated as a subspecies. (Cf. Oberholser, The Auk, XXXIV, No. 2, April, 1917, pp. 194-195.) Range: peninsula of Florida.

**Aphelocoma woodhouseii** (Baird) becomes **Aphelocoma californica woodhouseii** (Baird), because of intergradation with *Aphelocoma californica texana*. (Cf. Oberholser, Condor, XIX, No. 3, June 1, 1917, p. 94.)

**Aphelocoma texana** Ridgway becomes **Aphelocoma californica texana** Ridgway, because of intergradation with neighboring forms. (Cf. Oberholser, Condor, XIX, No. 3, June 1, 1917, p. 94.)

†**Aphelocoma californica immanis** Grinnell, The Auk, XVIII, No. 2, April, 1901, p. 188 (Scio, Willamette Valley, Oregon). Recognized as the subspecies breeding in northern California and western Oregon. (Cf. Oberholser, Condor, XIX, No. 3, June 1, 1917, pp. 94-95.)

- †**Perisoreus obscurus rathbuni** Oberholser. New subspecies. Oberholser, Proc. Biol. Soc. Wash., XXX, Dec. 1, 1917, p. 185 (Lake Crescent, Clallam Co., Wash.) Range: northwestern Washington.
- †**Corvus corax clarionensis** Rothschild and Hartert, Novit. Zool., IX, No. 2, July 25, 1902, p. 381 (Clarion Island, Revillagigedo Islands, Colima, Mex.). Recorded as the raven of the Santa Barbara Islands, Calif. (Cf. Bishop, Condor, XVII, No. 5, Oct. 10, 1915, p. 186).
- †**Molothrus ater artemisiæ** Grinnell, Univ. Calif. Publ. Zool., V, No. 5, Dec. 31, 1909, p. 276 (Quinn River Crossing, Humboldt County, Nevada). Reinstated as a subspecies. (Cf. Oberholser, The Auk, XXXIV, No. 3, July, 1917, pp. 327-328.) Range: western Canada, and western United States except southwestern border; south in winter to southern Mexico.
- Agelaius gubernator californicus** Nelson becomes **Agelaius phœniceus californicus** Nelson, since intergradation shows it to be subspecifically connected with *Agelaius phœniceus neutralis*. (Cf. Mailliard, Condor, XII, No. 2, March 25, 1910, pp. 63-70.)
- †**Sturnella neglecta confluenta** Rathbun. New subspecies. Rathbun, The Auk, XXXIV, No. 1, Jan., 1917, p. 68 (Seattle, Washington). Range: Pacific Coast region from southwestern British Columbia to northwestern Oregon.
- †**Hesperiphona vespertina brooksi** Grinnell. New subspecies. Grinnell, Condor, XIX, No. 1, Jan. 15, 1917, p. 20 (Okanagan, Brit. Col.). Range: southern British Columbia and Washington.
- †**Hesperiphona vespertina californica** Grinnell. New subspecies. Grinnell, Condor, XIX, No. 1, Jan. 15, 1917, p. 20 (Crane Flat, 6300 feet altitude, Mariposa County, Calif.). Range: California and Oregon.
- †**Hesperiphona vespertina warreni** Grinnell. New subspecies. Grinnell, Condor, XIX, No. 1, Jan. 15, 1917, p. 21 (Bear Creek, near Colorado Springs, Colo.). Range: Colorado, New Mexico, and Arizona.
- †**Pinicola enucleator kamtschathensis** (Dybowski). *Corythus enucleator kamtschathensis* Dybowski, Bull. Soc. Zool. France, VIII, 1883, p. 367 (Kamchatka). Recorded as North American from a specimen taken on St. George Island, Pribilof Islands, Alaska. (Cf. Riley, The Auk, XXXIV, No. 2, April, 1917, p. 210.)
- †**Carpodacus mexicanus obscurus** McCall. *Carpodacus obscurus* McCall, Proc. Acad. Nat. Sci. Phila., V, 1851, p. 220 (Santa Fe, New Mexico). Recognized as a subspecies. (Cf. Aiken, Colo. College Publ., (Gen. Ser., No. 75 and 76), Sci. Ser., XII, No. 13, pt. II, June, 1914, p. 549). Range: California to western New Mexico.
- †**Loxia curvirostra bendirei** Ridgway, Proc. Biol. Soc. Wash., II, April 28, 1884, p. 101 (Fort Klamath, Oregon). Reinstated as a subspecies. (Cf. Oberholser, The Auk, XXXIV, No. 3, July, 1917, pp. 328-329.) Range: western United States except the southwestern border.



**Passer hostilis** Kleinschmidt becomes **Passer domesticus hostilis** Kleinschmidt, because only subspecifically distinct from the bird of continental Europe. (Cf. Oberholser, *The Auk*, XXXIV, No. 3, July, 1917, p. 329.)

†**Nemospiza** Oberholser. New genus. Oberholser, *Ohio Journ. Science*, XVII, No. 8, June 2, 1917, p. 335 (type, *Emberiza henslowii* Audubon). Includes the following forms now in the genus *Passerherbulus*:

**Nemospiza henslowii henslowii** (Audubon).

**Nemospiza henslowii occidentalis** (Brewster).

†**Ammospiza** Oberholser, *Smiths. Misc. Coll.*, XLVIII, May 13, 1905, p. 68 (type, *Oriolus caudacutus* Gmelin). Reinstated as a genus. (Cf. Oberholser, *Ohio Journ. Science*, XVII, No. 8, June 2, 1917, p. 333.) Includes the following North American sparrows now in the genus *Passerherbulus*:

**Ammospiza caudacuta caudacuta** (Gmelin).

**Ammospiza caudacuta subvirgata** (Dwight).

**Ammospiza caudacuta nelsoni** (Allen).

**Passerherbulus nelsoni nelsoni** (Allen) becomes **Ammospiza caudacuta nelsoni** (Allen), by reason of intergradation with *Ammospiza caudacuta* (Gmelin). (Cf. Oberholser, *Ohio Journ. Science*, XVII, No. 8, June 2, 1917, p. 334.)

**Passerherbulus nelsoni subvirgatus** (Dwight) becomes **Ammospiza caudacuta subvirgata** (Dwight). (Cf. Oberholser, *Ohio Journ. Science*, XVII, No. 8, June 2, 1917, p. 334.)

†**Thryospiza** Oberholser. New genus. Oberholser, *Ohio Journ. Science*, XVII, No. 8, June 2, 1917, p. 332 (type, *Fringilla maritima* Wilson). Includes the following North American sparrows now in the genus *Passerherbulus*:

**Thryospiza maritima maritima** (Wilson).

**Thryospiza maritima macgillivraii** (Audubon).

**Thryospiza maritima peninsulæ** (Allen).

**Thryospiza maritima sennetti** (Allen).

**Thryospiza maritima fisheri** (Chapman).

**Thryospiza nigrescens** (Ridgway).

**Zonotrichia leucophrys gambellii** (Nuttall) becomes **Zonotrichia gambellii** (Nuttall), since it proves to be specifically distinct from *Zonotrichia leucophrys* (Forster). (Cf. Riley, *Canadian Alpine Journal*, special number, 1912 [Feb. 17, 1913], pp. 66-67).

**Junco hyemalis connectens** Coues becomes **Junco oreganus shufeldti** Coale (*Junco hyemalis shufeldti* Coale, *The Auk*, IV, No. 4, Oct., 1887, p. 330; Fort Wingate, New Mex.); also, by reason of the specific distinctness of *Junco oreganus* (Townsend) from *Junco hyemalis* (Linnæus) (cf. Riley, *Canadian Alpine Journal*, special number, 1912 [Feb. 17, 1913], pp. 67-68), the juncos now considered subspecies of *Junco hyemalis* will stand as follows:

- Junco hyemalis hyemalis** (Linnaeus).  
**Junco hyemalis carolinensis** Brewster.  
**Junco oreganus oreganus** (Townsend).  
**Junco oreganus shufeldti** Coale.  
**Junco oreganus thurberi** Anthony.  
**Junco oreganus pinosus** Loomis.  
**Junco oreganus montanus** Ridgway.  
**Junco oreganus mearnsi** Ridgway.  
**Junco oreganus annectens** Baird.  
**Junco oreganus townsendi** Anthony.
- Junco phænotus caniceps** (Woodhouse) becomes **Junco caniceps** (Woodhouse), since it proves to be specifically distinct from *Junco phænotus palliatus*. (Cf. Brooks, Condor, XVI, No. 3, May 15, 1914, p. 116; No. 4, July 25, 1914, p. 183.)
- Melospiza melodia fallax** (Baird) becomes **Melospiza melodia saltonis** Grinnell. *Melospiza melodia saltonis* Grinnell, Univ. Calif. Publ. Zool., V, No. 3, April 9, 1909, p. 268 (Salton Sea, one mile south-east of Mecca, Calif.). (Cf. Grinnell, Univ. Calif. Publ. Zool., XII, 1914, pp. 173-175).
- Melospiza melodia montana** Henshaw becomes **Melospiza melodia fallax** (Baird). (Cf. Grinnell, Univ. Calif. Publ. Zool., XII, 1914, pp. 173-174).
- †**Melospiza melodia inexpectata** Riley, Proc. Biol. Soc. Wash., XXIV, Nov. 28, 1911, p. 234 (three miles east of Moose Lake, Brit. Col.). Reinstated as a subspecies. (Cf. Riley, Canadian Alpine Journal, special number, 1912 [Feb. 17, 1913], p. 68.)
- Melospiza lincolni striata** Brewster becomes **Melospiza lincolni gracilis** (Kittlitz). *Emberiza gracilis* Kittlitz (Denkwürd. Reis. Russ. Amer., I, 1858, p. 199; Sitka, Alaska) is the same bird subsequently described as *Melospiza lincolni striata* by Brewster. (Cf. Willett, Condor, XVI, No. 2, March 15, 1914, p. 87).
- †**Passerella iliaca altivagans** Riley, Proc. Biol. Soc. Wash., XXIV, Nov. 28, 1911, p. 234 (Moose Branch of Smoky River, Alberta). Reinstated as a subspecies. (Cf. Riley, Canadian Alpine Journal, special number, 1912 [Feb. 17, 1913], p. 69.)
- †**Passerella iliaca monoensis** Grinnell and Storer. New subspecies. Grinnell and Storer, Condor, XIX, No. 5, Sept. 25, 1917, p. 165 (Mono Lake Post Office, altitude 6500 feet, Mono County, Calif.). Range: Mono County, Calif.
- †**Pipilo crissalis carolæ** McGregor. *Pipilo fuscus carolæ* McGregor, Bull. Cooper Ornith. Club, I, No. 1, 1899, p. 11 (Battle Creek, Shasta Co., Calif.). Reinstated as a valid subspecies. (Cf. Grinnell, Condor, XIV, No. 5, Sept. 28, 1912, p. 199.) Range: northern California and southwestern Oregon.
- †**Zamelodia melanocephala capitalis** (Baird). [*Hedymeles melanocephalus*] var. *capitalis* Baird, in Baird, Brewer, and Ridgway's Hist.

- North Amer. Birds, Land Birds, II, 1874, p. 70 (Columbia River, Oreg.). Revived as a subspecies. (Cf. Grinnell and Swarth, Univ. Calif. Publ. Zool., X, 1913, pp. 284-285; Bishop, Condor, XVII, No. 5, Oct. 10, 1915, p. 189.) Range: Pacific Coast region of the United States.
- Hirundo erythrogastra** Boddart becomes **Hirundo rustica erythrogastris** Boddart, by reason of subspecific relationship with *Hirundo rustica*. (Cf. Oberholser, Bull. U. S. Nat. Mus., No. 98, June 30, 1917, pp. 29-31.)
- Bombycilla garrula** (Linnaeus) becomes, in so far as North America is concerned, **Bombycilla garrula pallidiceps** Reichenow, Ornith. Monatsber., XVI, No. 12, Dec., 1908, p. 191 (Shesly River, northern British Columbia); since North American birds are subspecifically different from those of the Old World. (Cf. Oberholser, The Auk, XXXIV, No. 3, July, 1917, p. 333.)
- †**Lanius borealis invictus** Grinnell, Pacific Coast Avifauna, I, November 14, 1900, p. 54 (Kowak River, Alaska). Revived as a subspecies. (Cf. Bishop, Condor, XVII, No. 5, Oct. 10, 1915, p. 189). Range: western North America.
- †**Vireo bellii arizonæ** Ridgway, Proc. Biol. Soc. Wash., XVI, Sept. 30, 1903, p. 108 (Tucson, Arizona). Recognized as a subspecies. (Cf. Grinnell, Univ. Calif. Publ. Zool., XII, 1914, pp. 189-190; Oberholser, The Auk, XXXIV, No. 3, July, 1917, p. 322.)
- †**Vermivora celata orestera** Oberholser, The Auk, XXII, No. 3, July, 1905, p. 243 (Willis, northern New Mexico). Reinstated as a subspecies. (Cf. Oberholser, The Auk, XXXIV, No. 3, July, 1917, pp. 326-327). Range: western United States and southwestern Canada, except Pacific Coast district; in winter south to central and southern Mexico.
- †**Dendroica caerulescens cairnæi** Coues. Reinstated as a subspecies. (Cf. Oberholser, The Auk, XXXIV, No. 3, July, 1917, pp. 325-326.)
- †**Geothlypis trichas brachidactyla** (Swainson). *Trichas brachidactylus* Swainson, Anim. in Menag., 1838, p. 295 (northern provinces of United States). Reinstated as a subspecies. (Cf. Oberholser, The Auk, XXXIV, No. 3, July, 1917, p. 324.) Range: northeastern United States and southeastern Canada: south in winter to the West Indies, Costa Rica, and southern Mexico.
- †**Geothlypis beldingi goldmani** Oberholser. New subspecies. Oberholser, Condor, XIX, No. 6, Dec. 7, 1917, p. 183 (San Ignacio, Lower Calif.). Range: central Lower California.
- Anthus rubescens** (Tunstall) becomes **Anthus spinoletta rubescens** (Tunstall). (Cf. Hartert et al., Hand-List Brit. Birds, 1912, p. 35.)
- Thryomanes bewickii bairdi** (Salvin and Godman) becomes **Thryomanes bewickii eremophilus** Oberholser, Proc. U. S. Nat. Mus., XXI, Nov. 19, 1898, p. 427 (Big Hatchet Mts., Grant Co., New Mex.).

(Cf. Swarth, Proc. Calif. Acad. Sci., ser. 4, VI, May 8, 1916, pp. 80-83; Grinnell, Univ. Calif. Publ. Zool., XII, 1914, pp. 209-210.)

†**Thryomanes bewickii drymœcus** Oberholser, Proc. U. S. Nat. Mus., XXI, Nov. 19, 1898, p. 437 (Baird, Shasta Co., Calif.). Revived as a subspecies. (Cf. Swarth, Proc. Calif. Acad. Sci., ser. 4, VI, May 8, 1916, p. 68). Range: central part of northern two-thirds of California.

†**Thryomanes bewickii marinensis** Grinnell. *Thryomanes bewickii marinensis* Grinnell, Univ. Calif. Publ. Zool., V, No. 8, Feb. 21, 1910, p. 307 (Nicasio, Marin Co., Calif.). Revived as a subspecies. (Cf. Swarth, Proc. Calif. Acad. Sci., ser. 4, VI, May 8, 1916, p. 64). Range: coast region of northern California.

†**Thryomanes bewickii nesophilus** Oberholser, Proc. U. S. Nat. Mus., XXI, Nov. 19, 1898, p. 442 (Santa Cruz Island, Calif.). Revived as a subspecies. (Cf. Swarth, Proc. Calif. Acad. Sci., ser. 4, VI, May 8, 1916, p. 78.) Range: Santa Cruz and Santa Rosa islands, California.

†**Thryomanes bewickii catalinæ** Grinnell. *Thryomanes bewickii catalinæ* Grinnell, Univ. Calif. Publ. Zool., V, No. 8, February 21, 1910, p. 308 (Avalon, Santa Catalina Island, California). Revived as a subspecies. (Cf. Swarth, Proc. Calif. Acad. Sci., ser. 4, VI, May 8, 1916, p. 78.) Range: Santa Catalina Island, California.

**Thryomanes leucophrys** (Anthony) becomes **Thryomanes bewickii leucophrys** (Anthony). (Cf. Swarth, Proc. Calif. Acad. Sci., ser. 4, VI, May 8, 1916, p. 79.)

†**Telmatodytes palustris æstuarinus** Swarth. New subspecies. Swarth, The Auk, XXXIV, No. 3, July, 1917, p. 310 (Grizzly Island, Solano Co., California). Range: central California; in winter to southwestern California.

†**Leptositta** Buturlin. New subgenus. Buturlin, Travaux Soc. Impér. Naturalistes Petrograd, XLIV, livr. 2, 1916, pp. 153, 156-157 (type, *Sitta leucopsis* Gould). Includes *Sitta carolinensis* Linnaeus.

**Sitta carolinensis carolinensis** Latham becomes **Sitta carolinensis cookei** Oberholser, subsp. nov., The Auk, XXXIV, No. 2, April, 1917, p. 185 (Washington, D. C.). Range: northeastern United States and southeastern Canada.

**Sitta carolinensis atkinsi** Scott, becomes **Sitta carolinensis carolinensis** Latham, because South Carolina birds are subspecifically the same as those from Florida, the type locality of *Sitta carolinensis atkinsi*. (Cf. Oberholser, The Auk, XXXIV, No. 2, April, 1917, pp. 181-185.)

†**Micrositta** Buturlin. New subgenus. Buturlin, Travaux Soc. Impér. Naturalistes Petrograd, XLIV, livr. 2, 1916, pp. 153-156 (type, *Sitta villosa* Verreaux). To include all the North American nut-hatches except *Sitta carolinensis*.

†**Bæolophus inornatus murinus** Ridgway, Proc. Biol. Soc. Wash.,

XVI, Sept. 30, 1903, p. 109 (Nachoguero Valley, northern Lower California). Reinstated as a subspecies. (Cf. Hellmayr, *Genera Avium*, XVIII, 1911, p. 29; Oberholser, *The Auk*, XXXIV, No. 3, July, 1917, pp. 322-323.) Range: northern Lower California and southwestern California.

**Bæolophus wollweberi** (Bonaparte) becomes **Bæolophus wollweberi annexus** (Cassin) (*Parus annexus* Cassin, *Proc. Acad. Nat. Sci. Phila.*, V, Oct., 1850, p. 103, pl. I; "Rio Grande in Texas"), since birds from the United States are subspecifically different from true *Bæolophus wollweberi*. (Cf. Oberholser, *The Auk*, XXXIV, No. 3, July, 1917, pp. 323-324.)

†**Penthestes hudsonicus columbianus** (Rhoads). *Parus hudsonicus columbianus* Rhoads, *The Auk*, X, No. 1, Jan., 1893, p. 23 (*Field, Brit. Col.*). Revived as a subspecies. (Cf. Hellmayr, *Genera Avium*, XVIII, 1911, p. 37.)

†**Psaltriparinæ**. Revived as a subfamily, to include, so far as North America is concerned, only the genus *Psaltriparus* Bonaparte. (Cf. Hellmayr, *Genera Avium*, XVIII, 1911, p. 44.)

†**Psaltriparus minimus saturatus** Ridgway. *Proc. Biol. Soc. Wash.*, XVI, Sept. 30, 1903, p. 109 (Mount Vernon, Wash.). Revived as a subspecies. (Cf. Hellmayr, *Genera Avium*, XVIII, 1911, p. 55.)

†**Remizinae**. Revived as a subfamily, to include, so far as North America is concerned, only the genus *Auriparus* Baird. (Cf. Hellmayr, *Genera Avium*, XVIII, 1911, p. 55.)

**Regulus satrapa satrapa** Lichtenstein becomes **Regulus regulus satrapa** Lichtenstein, by reason of individual intergradation with *Regulus regulus*. (Cf. Hellmayr, *Genera Avium*, XVII, 1911, p. 8.)

**Regulus satrapa olivaceus** Baird becomes **Regulus regulus olivaceus** Baird. (Cf. Hellmayr, *Genera Avium*, XVII, 1911, p. 8.)

†**Corthylio calendula cineraceus** (Grinnell). *Regulus calendula cineraceus* Grinnell, *Condor*, VI, No. 1, Jan. 15, 1904, p. 25 (Strain's Camp, Mt. Wilson, Los Angeles Co., Calif.). Reinstated as a subspecies. (Cf. Hellmayr, *Genera Avium*, XVII, 1911, p. 9.) Range: western United States to northern Mexico.

†**Polioptila plumbea margaritæ** Ridgway. *Polioptila margaritæ* Ridgway, *Bull. U. S. Nat. Mus.*, No. 50, 1904, p. 733 (Margarita Island, Lower Calif.). Revived as a subspecies of *Polioptila plumbea*. (Cf. Hellmayr, *Genera Avium*, XVII, 1911, p. 14.)

†**Planesticus merula merula** (Linnaeus). *Turdus merula* Linnaeus, *Syst. Nat.*, ed. 10, I, 1758, p. 170 (Sweden). Recorded from a specimen taken on the western coast of Greenland. (Cf. Schiøler, *Dansk Ornith. For. Tidssk.*, XI, Hæfte 3-4, Sept., 1917, p. 175.)

†**Planesticus migratorius caurinus** Grinnell. *Univ. Calif. Publ. Zool.*, V, No. 2, Feb. 18, 1909, p. 241 (Windfall Harbor, Admiralty Island, Alaska). Reinstated as a subspecies. (Cf. Oberholser, *The Auk*, XXXIV, No. 2, April, 1917, pp. 195-196.) Range: western Washington to southeastern Alaska.



- †*Sialia sialis episcopus* Oberholser. New subspecies. Oberholser, Proc. Biol. Soc. Wash., XXX, Feb. 21, 1917, p. 27 (Santa Engracia, Tamaulipas, Mexico). Range: northeastern Mexico to southern Texas.

# REJECTIONS AND ELIMINATIONS.<sup>1</sup>

- Brachyramphus craverii** (Salvadori) vs. **Brachyramphus hypoleucus** Xantus. Proposal to synonymize *Brachyramphus craverii* with *Brachyramphus hypoleucus* (cf. Beck, Proc. Calif. Acad. Sci., ser. 4, III, 1910, pp. 60-61) rejected (cf. Van Rossem, Condor, XVII, 1915, pp. 74-76).
- Cepphus snowi** Stejneger. The record from Alaska (cf. Reichenow, in Niedieck's Kreuzfahrten im Beringmeer, 1907, p. 250) is too doubtful for inclusion in the North American list. (Cf. Oberholser, The Auk, XXXIV, No. 2, April, 1917, p. 191.)
- Gelochelidon nilotica** (Gmelin) vs. **Gelochelidon anglica** (Montagu). Proposal to change name because of inadequacy of Gmelin's description (cf. B. O. U. Committee, List Brit. Birds, ed. 2, 1915, p. 394), rejected. (Cf. Hartert et al., British Birds, VIII, No. 12, May 1, 1915, p. 281.)
- Sterna fuscata** Linnaeus vs. **Sterna fuliginosa** Gmelin. Proposed change (cf. Hartert, Jourdain, Ticehurst, and Witherby, Hand-List Brit. Birds, 1912, p. 196) rejected. (Cf. Iredale, Ibis, 1914, p. 437; Hartert, British Birds, IX, No. 1, June 1, 1915, p. 10.)
- Puffinus kuhlii borealis** Cory vs. **Puffinus kuhlii flavirostris** (Gould). Proposed change of name (cf. G. H. Thayer, Science, new series, XLII, No. 1079, Sept. 3, 1915, pp. 308-310) rejected. (Cf. Stone, Science, new series, XLII, No. 1085, Oct. 15, 1915, p. 530.)
- Alphapuffinus** Mathews, Austral Avian Record, II, No. 5, Sept. 24, 1914, p. 110 (type, *Puffinus assimilis* Gould). Not separable from *Puffinus* Brisson. (Cf. Oberholser, The Auk, XXXIV, No. 4, Oct., 1917, p. 472.)
- Puffinus assimilis** Gould vs. **Puffinus assimilis baroli** Bonaparte. (Compt. Rend. Acad. Sci., XLII, 1856, p. 769) (cf. Mathews, Birds Australia, II, pt. 1, May 30, 1912, pp. 67 to 69). Change rejected. (Cf. Hartert, British Birds, VIII, No. 12, May 1, 1915, pp. 282-283.)
- Puffinus couesi** Mathews, Birds Australia, II, pt. 1, May 30, 1912, p. 67. An unnecessary new name for *Puffinus opisthomelas* Godman since this is the same as *Puffinus opisthomelas* Coues. (Cf. Oberholser, The Auk, XXXIV, No. 4, October, 1917, p. 473.)
- Puffinus auricularis** Townsend vs. **Puffinus opisthomelas** Coues (cf. Mathews, Birds Australia, II, pt. 1, May 30, 1912, pp. 65-67). Change rejected, since both these names do not refer to the same

<sup>1</sup> Eliminations of forms already in the A. O. U. Check-List, the Sixteenth Supplement, the First Annual List or the Second Annual List, are designated by an asterisk.

- species. (Cf. Oberholser, The Auk, XXXIV, No. 4, Oct., 1917, p. 473.)
- Neonectris** Mathews, Austral Avian Record, II, No. 1, Aug. 2, 1913, p. 12 (type, *Puffinus brevicaudus* Gould). Originally proposed as a genus to include *Puffinus tenuirostris* and *Puffinus griseus*. Now considered neither generically nor subgenerically separable from *Puffinus* Brisson. (Cf. Oberholser, The Auk, XXXIV, No. 4, Oct., 1917, p. 472.)
- Bannermania** Mathews and Iredale, Ibis, ser. 10, III, No. 3, July 2, 1915, p. 578 (type, *Thalassidroma hornbyi* Gray), is not generically separable from *Oceanodroma* Reichenbach. (Cf. Oberholser, The Auk, XXXIV, No. 4, Oct., 1917, pp. 465-466.)
- Cymochorea** Coues. Proposed recognition as a genus (cf. Mathews and Iredale, Ibis, ser. 10, III, No. 3, July, 1915, pp. 574-581) rejected. (Cf. Oberholser, The Auk, XXXIV, No. 4, Oct., 1917, p. 467.)
- Sula dactylatra californica** Rothschild, Bull. Brit. Ornith. Club, XXXV, No. CCIII, Jan. 27, 1915, p. 43 (San Benedicto Island, Revillagigedo Islands, western Mexico). Alleged occurrence in California not substantiated. (Cf. Oberholser, The Auk, XXXIV, No. 4, Oct., 1917, pp. 467-468.)
- Hemisula** Mathews, Austral Avian Record, II, Nos. 2-3, Oct. 23, 1913, p. 55 (type, *Sula leucogaster rogersi* Mathews) = *Sula* Brisson. (Cf. Mathews, Birds Australia, IV, pt. 3, June 23, 1915, p. 230.)
- Anas fulvigula maculosa** Sennett vs. **Anas fulvigula** Ridgway. Proposed elimination of *Anas fulvigula maculosa* (cf. Phillips, The Auk, No. 3, July, 1912, pp. 297-299) rejected. (Cf. Phillips, The Auk, XXXIII, No. 4, Oct., 1916, pp. 432-433.)
- \***Dendrocygna viduata** (Linnaeus). The recent record from New Jersey (cf. Grinnell, The Auk, XXX, No. 1, Jan., 1913, p. 110) is probably based on a bird escaped from captivity. (Cf. Oberholser, The Auk, XXXIV, No. 2, April, 1917, p. 192.)
- \***Ardea herodias oligista** Oberholser (Proc. U. S. Nat. Mus., XLIII, Dec. 12, 1912, p. 531; San Clemente Island, Calif.) = *Ardea herodias hyperonca* Oberholser. (Cf. Swarth, Condor, XV, No. 1, Feb. 8, 1913, p. 50; Howell, Pac. Coast Avifauna, No. 12, June 30, 1917, pp. 43-44.)
- \***Rallus longirostris caribæus** Ridgway = *Rallus crepitans saturatus* Ridgway, in so far as North American records are concerned. (Cf. Simmons, The Auk, XXXI, No. 3, July, 1914, pp. 363-365; 384.)
- Rhyacophilus glareola** (Linnaeus) vs. **Rhyacophilus glareola affinis** (Horsfield) (cf. Mathews, Birds Australia, III, pt. 3, Aug. 18, 1913, pp. 230-232). Change rejected. (Cf. Thayer and Bangs, Proc. New Engl. Zool. Club, V, April 9, 1914, pp. 19-20.)
- Falco æsalon** Tunstall vs. **Falco regulus** Pallas. Proposed change of name (cf. Hartert et al., Hand-List Brit. Birds, 1912, p. 112) rejected. (Cf. Hartert et al., British Birds, IX, No. 1, June 1, 1915, p. 5.)

**Scotiaptex** Swainson vs. **Strix** Linnaeus. Proposed elimination of *Scotiaptex* as a genus (cf. Hartert, Vögel paläarkt. Fauna, Heft VIII [Band II, Heft 2], August, 1913, pp. 1013-1017) rejected. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 620, 634-639.)

\***Scotiaptex nebulosa lapponica** (Thunberg) = *Scotiaptex nebulosa nebulosa* (Forster), in so far as North American records are concerned. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, p. 635.)

**Cryptoglaux funerea richardsoni** (Bonaparte) vs. **Cryptoglaux tengmalmi richardsoni** (cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 623, 624). Change of name rejected. (Cf. Lönnberg, Ibis, 1913, pp. 398-400.)

**Otus asio gilmani** Swarth vs. **Otus asio cineraceus** (Ridgway). Proposed elimination of the former as inseparable from *Otus asio cineraceus* (Ridgway) (cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, p. 702) rejected. (Cf. Swarth, Condor, XVIII, No. 5, Sept. 18, 1916, pp. 163-165.)

**Bubo virginianus subarcticus** (Hoy) vs. **Bubo virginianus wapa-cutu** (Gmelin) (cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, p. 751). Change of name rejected. (Cf. Oberholser, The Auk, XXXIV, Oct., 1917, pp. 469-470.)

**Sphyrapicus ruber** (Gmelin) vs. **Sphyrapicus varius ruber** (Gmelin). Proposed reduction to a subspecies (cf. Swarth, Univ. Calif. Publ. Zool., X, 1912, pp. 34, 38) rejected. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, part VI, 1914, p. 282.)

\***Aphelocoma cyanotis** Ridgway. All North American records refer to *Aphelocoma californica texana* Ridgway. (Cf. Oberholser, Condor, XIX, No. 3, June 1, 1917, p. 94.)

**Astragalinus psaltria mexicanus** (Swainson). Revival as a subspecies (cf. Aiken, Colo. College Publ., Sci. Ser., XII, No. 13, pt. II, June, 1914, pp. 557-559) rejected, because regarded identical with *Astragalinus psaltria psaltria*. (Cf. Grinnell, Condor, XVI, No. 6, Nov. 25, 1914, p. 265.)

**Astragalinus psaltria arizonæ** (Coues). Revival as a subspecies (cf. Aiken, Colo. College Publ., Sci. Ser., XII, No. 13, pt. II, June, 1914, pp. 557-559) rejected, because regarded identical with *Astragalinus psaltria psaltria*. (Cf. Grinnell, Condor, XVI, No. 6, Nov. 25, 1914, p. 265.)

\***Hirundo erythrogastra palmeri** Grinnell = *Hirundo rustica erythrogastra* Boddart. (Cf. Oberholser, Bull. U. S. Nat. Mus., No. 98, June 30, 1917, p. 29.)

**Sitta atkinsi litorea** Maynard, Records of Walks and Talks with Nature, VIII, No. 1, Jan. 12, 1916 [Jan. 13, 1916], p. 5, pl. I (New River, N. C.) = *Sitta carolinensis carolinensis* Latham. (Cf. Oberholser, The Auk, XXXIV, No. 2, April, 1917, pp. 182-184.)

## GENERAL NOTES.

**Horned Grebe Rising from the Ground.**—The possibility of any grebe rising from a hard, level surface seems so generally doubted, that the following account (taken from my field notebook) of an actual instance appears to me worthy of permanent record. Of course it does not prove that any other species of the family can do so. Even Holboell's Grebe, of the same genus, may not have the ability, as Mr. F. Seymour Hersey tells me that it is much more loth to rise from the water than its smaller brother; he has approached by boat many of each species, and while the Horned Grebe has frequently flown away, Holboell's has invariably dived. There are also published stories of Holboell's and other species that were unable to leave after coming down onto a frozen lake or on the land.

On October 28, 1917, at Long Beach, Nassau County, Long Island, N. Y., Mr. Walter Granger and I met a gunner who had just shot a Horned Grebe (*Colymbus auritus*). A little further on we found another Horned Grebe sitting on the beach, on the hard part but well away from the water, in a horizontal, swimming position, not upright like an auk. On our approach it raised itself, and when we were within a few feet uttered a little, whining, protesting note, then scuttled rapidly away several yards, into the rather brisk wind and away from the water. On our second approach it repeated the performance, but kept on going, and rose from the hard beach into the wind. Flying strongly and swiftly, though it seemed to wobble somewhat, it made a circle to the right several hundred yards in diameter, turned and again with the wind came down onto the hard sand on the inner side of the bar. It landed on a long slant but so hard that it rolled over and over, until it finally sat up and settled itself comfortably. It was still there when we passed again about two and a half hours later.—CHARLES H. ROGERS, *American Museum of Natural History, New York City.*

**Pied-billed Grebe (*Podilymbus podiceps*) in Chester Co., Pa., in Summer.**—Opposite my home at Cheyney, Chester Co., Pa., is an extensive calamus marsh, with a public road running along the edge of it. On June 13, 1917, a man passing along this road found an adult male Pied-billed Grebe, which had evidently just been killed by a passing automobile. The specimen was given to me and is now in the collection of the Academy of Natural Sciences of Philadelphia. From the date and the condition of the bird there seems little doubt but that it was nesting.—SPENCER TROTTER, M. D., *Swarthmore College, Pa.*

**Breeding of the Pied-billed Grebe (*Podilymbus podiceps*) near State College, Center Co., Pa.**—On May 14, 1917, I found on a small pond at Scotia six miles from State College, Pa., a nest of the Pied-billed Grebe that held six slightly incubated eggs. The pond was open except at one

end where there was a short stretch of alders and scrub oak killed by a rise of the water at one time and it was at the edge of this slight protection that the nest was built. It was the usual mass of decaying vegetation, reeds, grasses, etc., and was attached to several of the alders as the water under it was two feet deep. When found, the eggs were entirely covered from sight and no birds were seen, although one bird was heard calling nearby. I had always regarded this species here as a migrant only and would never have searched for a nest had I not been attracted by the suspicious fact that this pair of birds could always be found at this particular part of the pond. They were first seen the 17th of April and when the first week in May passed and they were still daily in evidence, their presence could no longer be casually overlooked. This is, I believe, the first definite breeding record for this species in the State.—THOS. D. BURLEIGH, *State College, Pa.*

**A Red-throated Loon on Chestnut Hill Reservoir, Boston, Mass.—**

In the early afternoon of February 7, 1918, while I was observing the ducks on Chestnut Hill reservoir, a bird came on the wing from the westward which upon alighting on the water was seen to be a Red-throated Loon (*Gavia stellata*). After taking its bearings for a few minutes, it began to swim and dive in the ample area of open water about the intake, which even during the very severe weather of the present winter has been of considerable extent, affording a wintering place for Mergansers, Black Ducks, a few Golden-eyes, and recently a Ruddy Duck. At the time the sky was clouded, wind northeast, and the temperature about 24°. Two days later Mr. Barron Brainerd with Mr. Talbot found this loon still present. But when I visited the reservoir on the 11th, it was not there. The area of open water had been diminished almost half by a formation of thin ice around its borders and had become, perhaps, inadequate to the loon's sense of sufficiency. I am informed that Mr. Talbot noted the absence of this loon on the 10th.

This was my first record of a Red-throated Loon on a pond, lake, or reservoir. I find that Mr. William Brewster reports but one occurrence in his 'Birds of the Cambridge Region' [1906], that of a young male shot in Fresh Pond by Mr. Ruthven Deane on October 21, 1871. The species is not uncommon in winter along the seacoast of New England, and in its fall migration is rather common. Dr. C. H. Townsend in his 'Birds of Essex County' [1905] states, "The Red-throated Diver is a lover of salt water, very rarely, in Essex County, entering the fresh-water ponds and rivers." Dr. J. C. Philips in an article on 'Ten Years of Observation on the Migration of Anatidæ at Wenham Lake, Massachusetts,' (Auk, vol. XXVIII, April, 1911, p. 197) says concerning the Red-throated Loon, "Rare in the pond. The only specimen in my collection is a female marked Wenham Lake, October, 1906." Dr. Glover M. Allen in 'Birds of New Hampshire' [1903] gives two records of individuals taken in the interior of the State in the autumns of 1876 and 1886 respectively, and



states that "Mr. G. H. Thayer has noted it as a rare autumn visitant to Dublin Pond." Mr. Thayer (Auk, Vol. XXI, October, 1904, p. 493) gives a record of two seen in Dublin Pond "during a long and heavy north-easterly storm which ended on October 12 or 13, 1903." Mr. Ora W. Knight in his 'Birds of Maine [1908] says, "Occasional specimens are reported about the ponds and lakes in fall, or more rarely in spring." Messrs. Sage, Bishop and Bliss in 'Birds of Connecticut' [1913] state concerning the species, "very rare inland," and then give two autumn records.

So it would appear that in New England the Red-throated Loon's appearances inland on bodies of fresh water have been rare, and that these appearances have all been in the autumn, with the exception of Mr. Knight's testimony of occurrences in Maine under the expression "more rarely in spring." The Chestnut Hill reservoir occurrence in February, therefore, seems to stand by itself as an incident not duplicated in New England, so far as an examination of records show.—HORACE W. WRIGHT, *Boston, Mass.*

**The Ivory Gull (*Pagophila alba*) at Portland, Maine.**—On January 4, 1918, Mr. Walter H. Rich of this city informed me that he had on this day observed an Ivory Gull off Commercial wharf well up Portland Harbor; the following day, January 5, with Mr. Rich I visited the water front, and we soon had the bird under observation, watching it for an hour. Once it came within twenty yards of the end of the wharf, and lighted on a large ice cake, affording a perfect opportunity for full identification.

The deeply incised webs of the black feet were distinctly visible and were very noticeable. It was an immature bird and at this close range the brownish tips of the feathers of the wings and an imperfect tail band were distinct, though they were not visible when the bird was in the distance where we mostly saw it. The loreal region was so thickly spotted that in the distance the gull appeared to be wearing a dark mask, combined with an otherwise snowy white plumage. The snowy whiteness of its plumage, was always noticeably different from any other gull in the harbor, which contained at the time an abundance of *Larus argentatus* in all plumages, *Larus kumleni* and *Larus leucopterus*. Its habits and flight also differed distinctly: it was much more restless, now alighting on the ice, either to remain at rest for a few minutes, or to feed at the water's edge, and then away to search the edge of the ice field or to feed near some of the docks. It seemed to pay little or no attention to the other gulls, or their feeding. On the ice it ran rapidly, suggesting the action of a large plover. Its restlessness and independent action suggested to me the action of *Larus atricilla* as it appears in the company of *Larus argentatus*. Its dashing flight seemed more like that of a Jaeger than that of a gull. The wing was used at full extent with very little flexure at humero-radial and carpal joints and was broad and wedge shaped in comparison with the narrower wing of *Larus*

*argentatus*. It was seen for the last time January 7 by Mr. Rich though daily watch has been kept to the present time, February 22, 1918.

During the period that the bird was seen the mercury was hardly rising above 0° Fah. and the harbor and bay was a solid field of ice except as broken by the ever bushy tugs laboring to keep an open channel.

The only other record of this Gull in Maine that I have found is of a specimen in the United States National Museum, taken in "Penobscot Bay, Me., December,<sup>1</sup> 1894" though three examples have been reported from Grand Menan, N. B., just over the state boundary, two by George A. Boardman,<sup>2</sup> and one by Allan L. Moses.<sup>3</sup> Mr. Moses records his specimen as seen December 31, 1908, but dates are not given for the Boardman specimens.—ARTHUR H. NORTON, *Museum of Natural History, Portland, Me.*

**Glaucous Gull (*Larus hyperboreus*) at Philadelphia.**—On January 1, 1918, Mr. Richard Erskine saw one of these birds while crossing the Delaware River on a ferry boat from Camden, N. J. He was struck with the marked difference in its appearance from any of the Herring Gulls, with the plumages of which he was quite familiar, and suspected its identity. Consulting Chapman's 'Handbook' and the plate in Eaton's 'Birds of New York' he was convinced of the accuracy of his identification, and having a still closer view of the bird on January 4 all possibility of a doubt was dismissed, while a subsequent examination of specimens in the collection of the Academy of Natural Sciences, only served to confirm his opinion.

This is the first record for eastern Pennsylvania so far as I am aware.—WITMER STONE, *Acad. Nat. Sci., Philadelphia.*

***Pterodroma gularis* in North America.**—Through the courtesy of the Biological Survey and with thanks to Dr. Harry C. Oberholser, who called this matter to my attention and generously turned it over to me for publication, I am enabled to make an interesting addition to the list of North American birds.

A North American specimen of *Pterodroma gularis* (Peale) has for a number of years been in the collection of the Biological Survey in the United States National Museum, and it seems worth while now to put it on record as such. It is No. 230820 of the United States National Museum collection, and was found on the beach at the eastern base of Frosty Peak, Alaska Peninsula, August 6, 1911, by Mr. Alexander Wetmore. This bird, together with another taken by our expedition at the entrance to Kiska Harbor, in the Aleutian Islands, Alaska, form the basis of the recent record of *Astrelata fisheri* from Alaska (Smithson. Miscell. Coll., Vol. 56, No. 32, February 12, 1912, p. 10). Both these birds have been carefully

<sup>1</sup> 1915: Cooke, U. S. Dept. Agric. Bull. 292, p. 16.

<sup>2</sup> 1897: Chamberlain, Nutt. Man. ii: 245.

<sup>3</sup> 1908: Moses, Journ. Maine Orn. Soc. viii: 15.

compared with the types of both *Pterodroma fisheri* (Ridgway) and *Pterodroma gularis* (Peale), as well as with other pertinent material. Whatever the ultimate disposition of the apparently unique type of *Pterodroma fisheri*, it is certain that the two specimens from Alaska here mentioned are properly referable to *Pterodroma gularis*. They are, it is true, lighter and more greyish than the type of *Pterodroma gularis*, but not more so than other recently collected specimens of this species, so that the differences exhibited are surely not more than individual variations. In accordance with this identification, *Pterodroma gularis* should be added to the list of North American birds. I have long suspected this, but have only recently verified the identification through Dr. Oberholser.

The use of the generic name *Pterodroma* Bonaparte (1856) instead of *Æstrelata* Bonaparte (1857) has already been explained by Dr. E. Hartert (Handlist Brit. Birds, 1912, p. 154), the date (1855) usually cited for the latter proving to be wrong.—A. C. BENT, Taunton, Mass.

**Blue Geese on Long Island.**—Long Island is quite out of the usual range of the Blue Goose (*Chen caerulescens*), and I recall but one record for that locality — 1893 — when Mr. Wm. Dutcher stated that there was one specimen in the collection of the Long Island Historical Society, killed many years ago by Col. Nicholas Pike. That bird was taken on Shinnecock Bay, but the date does not seem to be known. The record appears in 'The Auk,' Vol. X, p. 270.

Within the last few years at least two separate captures of Blue Geese have been made on Long Island, by Captain John H. Prentice, 307th Infantry, while shooting geese over live Canada Goose decoys. Capt. Prentice, at Montauk, L. I., in November, 1911, killed a single Blue Goose, which came in over his decoys. The following year (1912) in the month of October, five Blue Geese came in, and all were secured. In the captures of each year one or more of these birds was sent to the taxidermist Thomas Rowland, in Sixth Avenue, New York, where I saw them. One of them was apparently a bird of the year without any white patches. Two of the specimens were preserved and are now mounted in Capt. Prentice's house at Montauk.

The line of migration of the Blue Geese is usually given as through the Mississippi Valley, and I believe that, in these days, stragglers in other regions are seldom encountered.—GEO. BIRD GRINNELL, New York City.

**The Whistling Swan at Cap St. Ignace, P. Q.**—On October 11 last, a flock of seven swans (*Olor columbianus*) was seen on the beach of the south side of the river St. Lawrence at Cap St. Ignace, about forty miles below Quebec. All these birds have been shot and six of them have been sent to me in the flesh to be stuffed. It is the second record of the presence of the bird in our province, that I know of. They were quite tame and seemed to be starved so that the hunters easily shot them.—C. E. DIONNE, Quebec, Canada.

**Solitary Sandpiper (*Tringa solitaria solitaria*) in New Mexico.**—A single specimen of the eastern form of the Solitary Sandpiper has been for some time in the collection of the Biological Survey, identified as *Tringa solitaria cinnamomea*. A recent examination of the specimen, however, shows that it is certainly a typical example of the eastern race, *Tringa solitaria solitaria*. It is a male in juvenal plumage, taken at Guadalupita, New Mexico, at an altitude of 6800 feet, on August 7, 1903, by Mr. A. E. Weller, and it now bears the number 193391 in the United States National Museum. It constitutes the only authentic record for New Mexico.—HARRY C. OBERHOLSER, *Washington, D. C.*

**King Rail (*Rallus elegans*) in Massachusetts.**—On September 15, 1917, on the edge of a fresh water pond, at Haverhill, Mass., I saw a rail which I supposed was this species, but I was unable to secure it. Just a month later in the same spot I again saw it, and succeeded in shooting it. The specimen was identified from a photograph, by Mr. E. H. Forbush and Mr. Walter Rich, and by Mr. M. Abbott Frazar, the taxidermist who mounted it.—CHARLES B. MORSS, *Haverhill, Mass.*

**Short-eared Owl (*Asio flammeus*) Eating Birds.**—The old duck hunters of Ashbridge's Marsh, Toronto, called this species "Snipe Owl." They claimed that its appearance in the fall was coincident with that of the Wilson's Snipe. This was true, at least, in the fall of 1909 when both species arrived at the same time.

Between September 28 and October 16, 1909, I spent several days collecting in a small dry meadow, on the south shore of Ashbridge's Marsh. Short-eared Owls were more numerous than usual and were apparently feeding entirely on small birds. Four stomachs examined contained feathers and bird bones exclusively. In a small tract of dry grassy meadow, roughly estimated at fifty acres, I found feathers of the following species, marking the spot where they had been eaten by the owls; one Hermit Thrush, one Sora, three Yellow-bellied Sapsuckers, one Slate-colored Junco, one White-crowned Sparrow, and eighteen others, of which there were not enough feathers left to identify the species.

During April and the early part of May of the following spring, the owls were again plentiful, preying on the hosts of migrants, that rested along the sandbar, after crossing Lake Ontario. With one exception all the castings examined contained the bones and feathers of small birds. This meadow was swarming with voles, but only one pellet, of the many examined was composed of the fur and bones of voles.—J. A. MUNRO, *Okanagan Landing, British Columbia.*

**Downy Woodpecker in Colorado.**—I have a specimen of the Downy Woodpecker (*Dryobates p. medianus*) taken on Clear Creek, near Golden, Colo., on February 25, 1917. The bird is a female and as the white spottings on the lesser wing coverts are somewhat restricted, I hesitated there-

fore before classifying it as this variety. I referred it however, to Mr. F. C. Lincoln of the Colorado Museum of Natural History, who advised that although not quite typical, its small size and general characters, unquestionably refer it to *medianus*.—E. RETT, *Denver, Colo.*

**The Starling in Montgomery, Alabama.**—A few evenings ago I was called to my telephone to identify a bird which had been blown into the yard of a farmhouse eight miles southeast of the city. Not being able to make a decision from the description given me, I suggested that the specimen be sent to my home. This was done the following day, and I immediately identified it as the European Starling (*Sturnus vulgaris*), though I had never before seen one. Several others who have seen it, have verified my opinion.

The bird had been blown against the barn of Mrs. Frances Hagan of this county during a rainstorm on the night of January 14 and was found dead the following morning. It is apparently a full grown male. The plumage has a tendency in color toward green rather than purple but the upper neck and back are decidedly of the later color and the tan yellow spots are decidedly lanceolate. I have identified it as a male in winter plumage.

The specimen has been mounted and presented to the Museum of the Alabama State Department of Archives and History.—PETER A. BRANNON, *Montgomery, Ala.*

**The Starling (*Sturnus vulgaris*) at Portland, Maine.**—Last summer several reports came to hand that the Starling was breeding at Stroudwater, a suburb of Portland. On tracing these reports it was found that they all emanated from one source, Mr. George Parker, a student in the Deering High School, and an earnest student of birds. On July 15, 1917, I visited Mr. Parker at his home in Stroudwater and he took me to a nearby orchard where we quickly found the Starlings in several small groups. Several of the groups flew to a point in the orchard and then across a field to another part of it and we were able to count nineteen, though there were undoubtedly more in the vicinity. Many of these were in brown immature plumage giving support to Mr. Parker's belief that four pairs had bred in the vicinity. His first observation (which he had noted in a diary) was December 27, 1916, of a group of five.

Though this is not the first time that the Starling has appeared in Maine in recent years, it is believed that this record may be of service in fixing the time of the permanent arrival of the bird in Portland.

One specimen from the colony has been preserved in the collection of the Portland Society of Natural History.—ARTHUR H. NORTON, *Museum of Natural History, Portland, Me.*

**Yellow-headed Blackbird at Ipswich, Mass.**—At Ipswich, Mass., September 17, 1917, I had under observation for about half an hour, a Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*). It was in the plumage of the female.—FRANCIS BEACH WHITE, *Concord, N. H.*



**Nesting of the Red Crossbill (*Loxia curvirostra minor*) in Essex County, Massachusetts.**—Our part of Cambridge is not without keen-eyed lads who devote spare hours to watching birds. To have them call on me every now and then with eager questioning or fresh report concerning things of local interest, is always pleasing and may also be instructive—as happened only the other day when Lovell Thompson and Charles F. Walcott came, bringing a nest of the Red Crossbill obtained by them last spring at Marblehead. Just how it was found and taken is explained by the following statement, written out, at my suggestion, by Lovell.

"During the winter of 1916-1917 I visited Marblehead, Mass.; with my friend Charles Walcott, several times. Each time we saw a flock of Red Crossbills there. On April 22, 1917, we noticed two in pitch pines near a house. Looking closer we found their nest, on a pine branch about eighteen feet above the ground. The male Crossbill flew from the tree but when I climbed it the female was on the nest and I got my hand within two feet of her before she left it to fly away. There were two eggs in it, both whitish with some dark markings. About a month later we visited the place again. There was then nothing to be seen of the Crossbills and only one broken egg shell remained in the nest which we took and have since given to Mr. Brewster."

The nest above mentioned somewhat resembles that of a Song Sparrow, being similarly bulky and deep-cupped, with thick walls mostly composed of bleached grass-blades and weed stalks. But it has also a bristling outer fringe of stiff twigs six to ten inches long, such as no Song Sparrow would thus be likely to employ. Moreover its neat lining of fine, soft grasses includes a few Crossbill feathers at least one of which, brick red in color, must have come from an adult male bird. Their presence affords, of course, convincing evidence as to the original ownership of the nest, thereby, indeed, it is "*self-identified*."

Two nests of the Red Crossbills in my collection from New Brunswick, both accompanied by sets of eggs and skins of parent birds, are, unfortunately, not well enough preserved to afford satisfactory comparison with the Marblehead specimen. From it they differ conspicuously in general coloring because abundantly garnished with grey-green *Usnea* moss of which it has none. They are also less shapely and almost devoid of coarse outer twigs but as a few of these remain in place their comparative absence may have resulted from careless handling on the part of the collector. In other respects all three nests seem essentially alike—at least as regards their general plan of construction.

In these days of innumerable bird watchers and voluminous bird literature it is difficult to make sure as to whether this or that is, or is not known and recorded. But to the best of my recollection and belief no nest of a Crossbill has ever before been found anywhere in eastern Massachusetts. Hence my boy friends are entitled to much credit for discovering the Marblehead one, while I am grateful to them both for so generously contributing it to my collection.—WILLIAM BREWSTER, *Cambridge, Mass.*

**The Song of Bachman's Sparrow** (*Peuceea aestivalis bachmani*).—The following account of the interesting vocal performances of this sparrow is based on notes made April 1, 1917. My records were confirmed on other occasions during several following weeks. The voice of one individual, especially, was studied. I was in the company of Mr. A. F. Ganier of Nashville, Tenn., who later collected the specimen. The bird was in its characteristic habitat, the border of a patch of open upland woods near Nashville; and it was perched on a fence post. We stood for fully five minutes not more than twenty-five feet away.

The bird sang with only short rests, and the duration of the song which was very variable, was about two to three seconds. Usually, the song started with a single long note followed by a group of short notes in a tempo so fast that we could not be sure of our count. So far as we could determine, the bird had seven to twelve notes in this group, usually about ten. As a rule, they were of essentially uniform pitch, but not of the same pitch as the long opening note. The pitch was sometimes lower than that of the first note and sometimes higher. A few performances had two or three opening notes not so long as the usual, single one. On one occasion, the song was repeated or rather one song followed another with no interruption or pause, both being a little shorter than usual.

The quality was remarkably variable, but it tended to be fairly uniform in a single song. Sometimes the series of rapid notes was thin and resembled somewhat the song of a Junco. At other times, it was relatively rich and full. Intermediate grades of quality occurred.—R. M. STRONG, Nashville, Tenn.

**Summer Tanager** (*Piranga rubra rubra*) in N. E. Illinois.—The Summer Tanager is of so rare occurrence in northern Illinois, that I had never taken one in forty-five years collecting, until May 19, 1917, when my friend Lyman Barr brought me a very beautifully marked specimen, which he had shot in a clump of woods two miles west of Highland Park.

It proved to be an adult female. The upper parts are of the usual brownish olive, but are variegated with a reddish wash on the occiput and middle of the back.

The sides of the neck, upper and lower tail coverts, and a band across the breast are pale poppy red, giving the bird a very striking appearance.—HENRY K. COALE, Highland Park, Ill.

**Bohemian Waxwing** (*Bombycilla garrula*) **Breeding within the United States.**—While carrying forward field work for the Biological Survey, U. S. Department of Agriculture, in the State of Washington, during the past summer, it was reported to me by E. F. Gaines, in charge of crop investigations, Washington Agricultural Experiment Station, Pullman, Washington, that he had found the Bohemian Waxwing breeding in the vicinity of his old home place at Chewelah, Stevens County, Washington. The nest was found about June 11, 1907, on Chewelah Creek, six miles in a general northerly direction from the town of Chewelah.

In point of time the present appears to be the second actual record for the breeding of *Bombycilla garrula* within the United States. Dr. T. S. Palmer calls my attention to the fact that the first published notice of the species as a breeding bird within our borders is that of a Dr. C. S. Moody, who recorded the discovery of a nest and five eggs in the vicinity of Humbird (mail Sandpoint), Bonner County, Idaho (Pacific Sportsman, Vol. 2, June, 1905, p. 270). Mr. F. M. Dille, Reservation Inspector, Biological Survey, reported the Bohemian Waxwing nesting at Lake Clealum, Kittitas County, Washington, on July 15, 1911.

I am indebted to Miss May T. Cooke for calling my attention to the fact that Aretas A. Saunders published a note (Condor, Vol. 14, November, 1912, p. 224), concerning observations of the Bohemian Waxwing made at 5200 feet altitude, Canadian Life Zone, on the West Fork of Sun River, northern Lewis and Clark County, Montana, on August 18 and 21, 1912. Saunders says the birds seen had probably nested in the vicinity.

The records are all for Canadian Zone, or for Transition Zone not far from the Canadian Zone boundary. They indicate that the Bohemian Waxwing occurs, probably rarely, as a breeding bird within our borders in the coniferous forests of the northern Rocky Mountain region, in a district embracing northwestern Montana, northern Idaho, and northern Washington.

To summarize, records at hand for the breeding of *Bombycilla garrula* within the United States are four in number, as follows: 1905 (nest probably found in 1904), Humbird (mail Sandpoint), Bonner County, Idaho, Dr. C. S. Moody; 1907, June 11, Chewelah Creek, six miles in a general northerly direction from Chewelah, Stevens County, Washington, E. F. Gaines; 1911, July 15, Lake Clealum, Kittitas County, Washington, F. M. Dille; 1912, August 18 and 21, West Fork of Sun River, northern Lewis and Clark County, Montana, Aretas A. Saunders.—WALTER P. TAYLOR, Washington, D. C.

**Philadelphia Vireo (*Vireosylva philadelphia*) in North Dakota in Summer.**—The writer found a Philadelphia Vireo (*Vireosylva philadelphia*) on July 8, 1917, at the south end of Carpenter Lake in the Turtle Mountains, North Dakota. The bird was in full song and evidently at home among the trees of a grove of aspens (*Populus tremuloides*) close to the shore of the lake. This represents the westernmost breeding record of the species for the United States, and is the first published summer occurrence for North Dakota.—HARRY C. OBERHOLSER, Washington, D. C.

**Prothonotary Warbler (*Protonotaria citrea*) in New Jersey.**—The rarity of the Prothonotary Warbler (*Protonotaria citrea*) in the state of New Jersey is sufficient reason for placing on record a specimen which has for years been in the Biological Survey collection in the United States National Museum. This is an adult male in perfect plumage, No. 137667 of the United States National Museum collection, and was taken at Morris-

town, New Jersey, June 14, 1888, by Mr. L. P. Scherrer. So far as we are aware, this is the fourth record of this species in New Jersey and the second specimen secured.—HARRY C. OBERHOLSER, *Washington, D. C.*

**The Subspecific Name of the Northern Parula Warbler.**—To change the well-established name of any bird for almost any reason has always seemed to me something best left undone. Nevertheless there are cases where it cannot be avoided. This, perhaps, is true of the one thus referred to by Dr. Oberholser, in a personal letter dated January 21, 1918. "You will note that in your paper in 'The Auk,' XIII, 1896, p. 44, you rejected the name *Sylvia pusilla* Wilson (Amer. Orn., IV, 1811, p. 17, pl. 28, fig. 3), because presumably preoccupied by *Sylvia pusilla* Latham (Supplement Ind. Orn., 1801, p. 56). This latter name, however, results merely from the putting into the genus *Sylvia* of *Motacilla pusilla* White (Journ. Voy. New S. Wales, 1790, p. 257, pl. 42), which is now *Acanthiza pusilla* (White). According to our present rules of nomenclature, the name *Sylvia pusilla* Latham, not being an original description, but merely a nomenclatural combination, does not prevent any subsequent use of the same combination; therefore, the name *Sylvia pusilla* Wilson, of which the type locality is eastern Pennsylvania, becomes available for the northern form of the warbler which you named *Compsothlypis americana usneæ*, and which would, therefore, stand as *Compsothlypis americana pusilla*. I think I have thus given you all the references and data necessary to write up the matter for publication, and I trust I have made myself clear. It seems very much better for you to make the change than for me to do so, since you were the discoverer and original describer of the subspecies."

With the above statement of fact and opinion I now see no reason to disagree—especially as the change thereby suggested will result in the restoration of a time-honored name, to which Wilson seems justly entitled. Nor could any one be otherwise than pleased with courtesy so gracious and self-oblivious as that expressed in the closing sentence of Dr. Oberholser's characteristic letter.—WILLIAM BREWSTER, *Cambridge, Mass.*

**Bachman's Warbler and Solitary Sandpiper in Indiana.**—On May 16, 1917, while working through a fine bit of warbler woods near Indianapolis, I was startled by an apparition of a male Bachman's warbler (*Vermivora bachmani*). The pretty fellow popped up from a low bush in a mass of undergrowth and after fluttering among the twigs for a moment dropped down out of sight. I was about to conclude that I had been dreaming of rare warblers when up came the bird again from the same bush and his second visit was much longer than his first. I had a fine chance to note his yellow forehead and throat with the great splotch of black on his chest. After a time he left for a distant part of the woods traveling leisurely from low bush to low bush inspecting the twigs critically and taking insects constantly. I finally lost him. Afterward I visited the woods several days in succession hoping to see the bird but without result

until about a week later when I had the good fortune to see both male and female.

I frequently saw one or the other of the birds, occasionally both together, all during the breeding season but was not able to locate a nest though feeling sure that they had built one in that immediate vicinity.

The character of the woods was such as would appeal to a Bachman's Warbler in breeding time. High trees with thick undergrowth covered rolling ground, each depression being very damp and almost swampy. In the densest part of the woods there was a stagnant pool and in and about this pool a pair of Solitary Sandpipers elected to spend the time from April to the middle of June after which time I was unable to watch them, being out of the city. Early in the season they paid very little attention to visitors and when disturbed would fly up with their characteristic piping notes, then immediately settle down again in the very place where they had been feeding, but about the first of June only one bird was in evidence at a time and when a visitor approached it would scurry out of sight into the mass of swamp willows which filled the center of the pool. Might not these birds have been nesting there, too?—ETTA S. WILSON, *Detroit, Michigan*.

**The Canada Warbler again in Colorado.**—A specimen of the Canada Warbler (*Wilsonia canadensis*) was taken on Clear Creek, Colo., near Denver, by my brother, Arthur Rett, on May 26, 1917. It is a male in excellent plumage, and is now in my collection.—E. RETT, *Denver, Colo.*

**Mockingbirds (*Mimus polyglottos polyglottos*) Spending the Winter at West Haven, Conn.**—I announced in the April, 1917, number of 'The Auk' the presence of a Mockingbird in West Haven, Conn., from November 8, 1916, to March 24, 1917.

On July 17, 1917, the bird returned and is passing the winter at the same place. (January 20, 1918.) Last winter the bird would not take food put out for it but preferred to eat Honeysuckle and Bittersweet berries, but this winter it takes food put out for it and has become so tame as to alight on the windowsill and eat food. I have also observed it eating the dry seed pods of the asparagus which it swallowed whole as it does the berries of the Bittersweet.

On November 18, 1917, while at Colonial Park, a summer resort about two miles from West Haven, I observed another Mocker which was eating the berries of a Honeysuckle vine that grew along a fence. The extreme cold weather during the last few days of December and the first of January, I thought would surely kill our Mocker, but he came through all safe and seems none the worse. During that time the thermometer went as low as twelve degrees below zero, which proves that Mockingbirds are not altogether southern birds but can stand our northern winters. The plumage of this bird is quite different this winter, having a great deal more white in the wings and tail so I would judge that it was a young bird when it passed the winter of 1916 and 1917 with us.—NELSON E. WILMOT, *West Haven, Conn.*



**The Hudsonian Chickadee (*Penthestes hudsonicus subsp.?*) in North-eastern Pennsylvania in June.**— In company with Richard C. Harlow, Richard F. Miller and Albert D. McGrew, I spent three weeks in the field in the spring of 1917 about La Anna, Pike County, Pa., and June 3, while searching a large sphagnum bog for a nest of the elusive Northern Water-Thrush, two brown capped chickadees were seen. I had gotten a little behind the others and was hurrying to catch up to them when the unmistakable nasal "chick-a-dee-dee" of one of these birds was heard. It had happened that earlier in the spring I had seen a single individual (Auk, 1917, p. 344) and had become familiar with its notes so I recognized it at once. The birds, two of them, were feeding in several small tamaracks and with characteristic lack of timidity allowed a close approach where their identity was established beyond doubt. They showed a preference for a certain part of the bog that we had been floundering through but although several suspicious looking holes were found, we could detect no signs of their nesting. I returned to this spot the next day, and had no difficulty in finding the birds again. This time I spent two hours trailing them but with no success other than leaving with the conviction that they were mated and if not as yet nesting here, would undoubtedly do so. Not satisfied, however, all of us returned the following day and made another attempt but with no more luck though we again found them at the same place. The necessity of leaving soon after for another part of the state made further study of the birds impossible. From what we had seen, however, there seemed little doubt but that the birds intended to breed in this tamarack swamp. The situation in which they were found was typical of that much farther north, being indeed a northern muskeg in every sense of the word, with lichen covered tamarack, deep beds of sphagnum moss and scattered pools.—THOS. D. BURLEIGH, *State College, Pa.*

**Hudsonian Chickadee on the Pocono Mountain, Pa.**— On the morning of June 17, 1917, at Pocono Lake, Pa., I found a pair of brown-headed chickadees, probably the Labrador (*Penthestes h. nigricans*). The location was at the edge of a sphagnum swamp amid a dense grove of dwarf spruces. When discovered the birds evidenced considerable excitement and came and scolded within three feet of me. Their actions and movements were more deliberate and confiding than those of either the Black-capped or Carolina species. I noticed one of them examining a small hole in a decayed stub which led me to believe it to be a nesting site. This was not the case however, although the conditions seemed favorable, as the cavity contained nothing but a few chips of bark. The birds remained in the locality during all the time that I was there.

On the following morning I found the birds again in the same location but was unable to study them subsequent to this as I made my departure from the district that afternoon.

Mentioning my discovery to Mr. John D. Carter, who had arranged to visit the country a week later, he made a further search for the birds but was able to find but one of them.

The outcome of these observations did not reveal that the birds had nested or were intending to nest in the locality, but the occurrence so far south is interesting.— J. FLETCHER STREET, *Beverly*, N. J.

**Hudsonian Chickadee** (*Penthestes hudsonicus subsp.?*) at Princeton, N. J.— There were four of these birds upon my place from November 18 until March 31 of last year, 1916–1917, during which period I saw one or more of them almost daily feeding upon the suet near my window.

I thought, at the time, that they were the Acadian variety, with which I am familiar in northern Maine, although I noticed that they seemed darker than any specimens which I had previously observed.

I was unaware at the time of Dr. Townsend's Labrador subspecies, to which they may have belonged.

I have neither seen, nor heard of, any in the neighborhood this year.— HENRY LANE ENO, *Princeton*, N. J.

**A Robin which Migrated Tailless.**— In the spring of 1914 a tailless male Robin arrived in the Boston Public Garden, a plump, brightly plumaged bird, and remained there as one of a breeding pair. During the weeks succeeding his arrival there was no perceptible development of a tail. On April 13, 1915, there again arrived a tailless male Robin on a morning when several females joined the company of males already present. This tailless male adopted the same limited area of the Garden as did the tailless bird of the preceding year. So the almost unavoidable conclusion was that it was the same bird, and that it was not a mere coincidence. On April 19, 1916, again a tailless male Robin arrived and again adopted the same small area of the Garden as his possession, a plump and brightly plumaged bird as before. The conclusion was then confirmed beyond reasonable doubt that it was indeed the same Robin back for the third season without a tail. This being so, the fact was that this Robin had made his migratory flights for three successive years without the aid of any tail as a rudder in flight. Neither season did any tail develop. Apparently the bird had lost the fleshy tip from which tail feathers could be developed. There was no change in its appearance, season by season. In the season of 1914 the first Robins came to the Garden on March 25 and during the next few days were joined by others. In 1915 the first Robin arrived on March 19 followed by others within a week. In 1916 the first two Robins came to the Garden on March 25, and on April 1 a dozen resident males were present. Thus it is perceived that the tailless Robin was a rather later arriving bird each season. Twenty resident Robins were already present in the Garden when he came north in 1915 and 1916. So, perhaps, this tailless Robin made his migratory flights less speedily than did others. But this supposition would seem to be not very strongly based for the reason that Robins are arriving usually throughout the month of April, and the tailless bird was not really behind time. The only conclusion to be drawn, therefore, would seem to be that the bird had experienced little or no disadvantage in flight due to not possessing a

tail, or if its absence had been a disadvantage, he had effectively overcome it. We looked for this tailless Robin in the spring of 1917, but in vain; he did not come to the garden.—HORACE W. WRIGHT, *Boston, Mass.*

**Connecticut Notes.**—The following recent records are, perhaps, worth recording. They are all Stamford records, except where otherwise noted.

**Melanerpes erythrocephalus.** RED-HEADED WOODPECKER.—An adult male was taken May 27, 1916.

**Empidonax virescens.** ACADIAN FLYCATCHER.—Male taken May 24, 1915. Another male taken May 27, 1915. A female taken May 29, 1916.

**Acanthis linaria linaria.** REDPOLL.—Several flocks of from twenty-five to fifty birds were observed each week from December 25, 1916 to February 12, 1917. They were usually feeding in high, weedy fields on the edge of woods, but were sometimes grouped in the maple trees at the edge of the field, and on several instances on the lawn around the house. They have never been so common in this vicinity before to my knowledge. I think I have not seen more than half a dozen Redpolls before this in Stamford in the last twenty years.

**Passerculus princeps.** IPSWICH SPARROW.—An adult male was taken January 20, 1917, in the low sedge bushes at the edge of salt meadow at East Norwalk.

**Passerculus sandwichensis savanna.** SAVANNAH SPARROW.—A male was taken January 20, 1917 in the sedge bushes at the edge of the salt meadow at East Norwalk. The bird was in company with the Ipswich Sparrow noted above, and was apparently a healthy bird and a winter resident.

**Zonotrichia albicollis.** WHITE-THROATED SPARROW.—Two flocks of twenty-five birds or more in each were seen in some weedy fields at Darien on November 30, 1917. The latest record given in Bishop and Sage's 'Birds of Connecticut' for fall migration was November 28, 1885. A male was taken to verify the field identification, and in view of the rather unusually cold fall, this very late record seems interesting.

**Vermivora peregrina.** TENNESSEE WARBLER.—An adult male was found dead in the wire of my tennis court on May 20, 1916. An adult female was found dead in the same place June 2, 1917. Both of these birds were found within a few hundred yards of the place at which I took three specimens on May 20, 1892, which are already recorded.

**Dendroica palmarum palmarum.** PALM WARBLER.—A female was taken October 12, 1917 in my garden. It was feeding around the vegetable plants in company with several Yellow Palm Warblers.

**Oporornis philadelphia.** MOURNING WARBLER.—An adult male was taken May 30, 1917 at Mud Pond, a few miles north of New Canaan. The bird was feeding in low bushes and on the ground at the edge of a growth of high woods on rather a wild hillside above the lake.—LOUIS H. PORTER, *Stamford, Conn.*

**Massachusetts Notes.**—The following records taken from my note book which refer either to birds rare in Massachusetts or to unusual dates of occurrence. The specimens were taken by myself, with the exception of the Black Vulture (*Catharista urubu*) and Labrador Horned Owl (*Bubo virginianus heterocnemis*), and all specimens are preserved in my collection.

**Stercorarius longicaudus.** LONG-TAILED JAEGER. On July 23, 1910, about five miles east of Pigeon Cove, part of Rockport, Mass., female specimen taken.

**Larus hyperboreus.** GLAUCOUS GULL. On April 20, 1915, near the Salvages off Rockport, Mass., immature female specimen taken.

On April 24, 1915, in the same locality, an immature male specimen taken.

**Larus leucopterus.** ICELAND GULL. On April 19, 1915, I saw a beautiful entirely snow white Iceland Gull sitting beside a Herring Gull, on the breakwater off Rockport, Mass. At the distance seen, about fifty yards, the bill was conspicuously all black, the back looked the same as the breast snow white and when the bird flew I saw that the ends of the wings were white.

On Jan. 22, 1916, near the Salvages off Rockport, Mass., I saw six Iceland Gulls. The birds were flying about, among a large number of Herring Gulls, and were seen near enough to positively identify them, allowance being made for seeing the same bird twice, in giving the probable number of six. Two of the birds were taken, both males, one of which was an adult, with mantle pale pearl-blue and fresh color of bill a very delicate shade of light green, with yellow spot, almost an orange shade, on the lower mandible near angle, and a lighter yellow spot, somewhat diffused and not as pronounced, on the upper mandible just over the spot on the lower mandible. The measurements and weights of the two birds were practically the same.

On May 13, 1916, near the Salvages off Rockport, Mass., I saw an Iceland Gull, near enough, several times, to positively identify the bird.

On Feb. 22, 1917, in the same locality, I saw an Iceland Gull, which came within thirty-five yards of the boat.

On Feb. 4, 1918, a short distance off Rockport, Mass., I saw three Iceland Gulls, two of which were taken, both immature males.

On Feb. 11, 1918, same locality, two immature female specimens taken.

**Larus kumlieni.** KUMLIEN'S GULL. On Jan. 31, 1913, a short distance off the shore of Lanesville, part of Gloucester, Mass., an adult female specimen was taken.

**Puffinus griseus.** SOOTY SHEARWATER. On May 29, 1916, about six miles east of Pigeon Cove, Mass., a female specimen was taken.

**Arquatella maritima maritima.** PURPLE SANDPIPER. On May 30, 1917, on the Salvages off Rockport, Mass., I saw a flock of about forty Purple Sandpipers, six of which were taken.

**Catharista urubu.** BLACK VULTURE. On May 12, 1916, at Pigeon Cove, Mass., a specimen was taken, sex undetermined.

**Bubo virginianus heterocnemis.** LABRADOR HORNED OWL. About

Dec. 22, 1917, at Marshfield, Mass., a male Labrador Horned Owl was taken by Mr. Wilbur Ewell. Mr. C. E. Shaw was at Marshfield on Dec. 26, 1917, and saw the recently taken specimen and was told by Mr. Wilbur Ewell that he shot the bird the latter part of the week before (he thought the 22nd), on Hen Island, near the edge of the salt marsh. I am indebted to Mr. Shaw for giving me the specimen in the flesh with the data. On dissection, the bird was not fat and there was nothing in the stomach. The specimen was identified by Mr. William Brewster, Mr. Charles F. Batchelder and Mr. Outram Bangs, being compared with specimens in Mr. Brewster's collection and later Mr. Bangs kindly compared the specimen with those in the Museum of Comparative Zoölogy.—CHARLES R. LAMB, Cambridge, Mass.

**Massachusetts Notes.**—On May 7, 1917, Messrs. C. W. Welch and Henry M. Murphy caught alive in Stoughton, Mass., an adult Greater Snow Goose (*Chen hyperboreus nivalis*). The primaries of one wing were gone, not cut. This specimen is now on exhibition at the Boston Society of Natural History, through the generosity of its captors.

On February 10, 1918, a Kingfisher (*Ceryle alcyon alcyon*) was seen flying over a frozen salt marsh at Cohasset, Mass. No open water was to be seen anywhere save the open ocean between Duxbury and Boston.—W. SPRAGUE BROOKS, *Boston Soc. Nat. Hist., Boston, Mass.*

**Notes from the Chicago Area.**—I would like to report the following rare birds for this locality.

Two fine specimens of the Long-tailed Jaeger (*Stercorarius longicaudus*) have been taken near Chicago; the first by Mr. Frances T. A. Junkin who writes me as follows: "the bird was seen in Lake Como, Walworth County, Wisconsin, in October, 1916. It was flying high over the middle of the Lake and seemed to be looking for something. It was so markedly a strange bird that it was taken for my collection." The bird is in the dark, immature plumage, without the long tail feathers.

The second bird is also in the dark plumage, a rich gray with fine penciling of a lighter color. This bird was seen first on August 20, 1917. While watching the gulls and terns, at Miller's, Indiana, we were rather startled by a ghost-like gray bird, which glided by us, more like a hawk than a gull. I reported the bird to the fishermen at Miller's, and asked them to let me know if such a bird should be seen around their nets. On September 11, 1917, the bird was found dead on the beach, and is now in the collection of the Chicago Academy of Science.—FRANK M. WOODRUFF, *Chicago Acad. Sci., Chicago, Ill.*

**Notes on some British Columbia Birds.**—*Colymbus nigricollis californicus*. EARED GREBE.—This species was first taken in the Okanagan District by Mr. Allan Brooks, on May 23, 1912. An adult male was collected by the writer on September 30, 1915. Sight records were



made on the following dates: May 31, 1912, one; May 27, 1915, one; May 10, 1917, two; October 2, 1917, two.

**Gavia stellata.** RED-THROATED LOON.—On November 22, 1915, the writer picked up a juvenal female, on the shore of Okanagan Lake. This is the first record for the Okanagan District.

**Querquedula discors.** BLUE-WINGED TEAL.—Common in the Cariboo District. A number of specimens were sent to me in the flesh, from 105 Mile House, in the fall of 1915. They are comparatively rare in the Okanagan District. Five were seen during the month of May, 1915, and three of them secured.

**Recurvirostra americana.** AVOCET.—There is a mounted specimen, unsexed, in the Provincial Game Wardens office at Vancouver; shot near the mouth of the Fraser by Mr. N. H. Bain on September 20, 1915. This is the second record for the province.

**Macrorhamphus griseus.** LONG-BILLED DOWITCHER.—An adult male, in breeding dress taken on July 30, 1915, and two juvenal males collected on September 9, 1916, are the only Okanagan records.

**Strix occidentalis caurina.** NORTHERN SPOTTED OWL.—Mr. T. L. Thacker of Hope, B. C., recently sent me the wings and head of a Northern Spotted Owl that had been shot near Klesilkwa Creek in the Hope Mountains, on June 24, 1916. Mr. Thacker informs me that he has seen these "brown eyed owls" several times, in heavily timbered country, on the pacific side of the Hope Mountains.

**Chaetura vauxi.** VAUX'S SWIFT.—Common near Hedley in the Semelkameen Valley. A number were seen in the narrow, deep, Nickle Plate Canyon, dashing about the cliffs in company with Violet-green Swallows. Several females that were collected on June 7, 1917, showed worn breeding patch. It is possible that they nested in some of the deep crevices in the high cliffs.

Mr. T. L. Thacker sent me a nestling in the flesh, from Yale, B. C. It had fallen from a nest that was built under the roof of the C. P. R. water tank. There are a number of small openings under the eaves, and Mr. Thacker tells me that several pairs breed there every year.

**Aëronautes melanoleucus.** WHITE-THROATED SWIFT.—Major Allan Brooks published a sight record in 1909.<sup>1</sup> The following year he made a trip to the southern Okanagan, in search of this bird, but was unsuccessful. No further reports of its occurrence were received until the summer of 1917, when Mr. George N. Gartrell, found a breeding colony, estimated at seven pairs, in a rock bluff near Vaseaux Lake. He was able to secure two specimens on June 29; these skins are now in my collection.

**Zamelodia melanocephala.** BLACK-HEADED GROSBEEK.—An adult male, taken at Okanagan Landing, on May 30, 1916, is the only local record.—J. A. MUNRO, *Okanagan Landing, British Columbia.*

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<sup>1</sup> Auk, Vol. XXVI, No. 1, January, 1909.

**Notes on some Species New to the Colorado List of Birds.**— Among the results accomplished through a biological survey of Colorado by the Colorado Museum of Natural History, the following notes are of general interest and it seems advisable to record them at this time.

**Tympanuchus pallidicinctus.** LESSER PRAIRIE CHICKEN.— As the presence of this bird within the limits of Colorado was considered probable, a special trip was made into the extreme southeast corner of the state (Baca County) during May, 1914. The first specimen was secured May 24 (C. M. N. H. No. 4146, adult male). Another trip into the same territory from Sept. 21 to 23, of the same year afforded additional specimens of both sexes.

It was assumed that this region marked the northernmost limits of their range but in the fall of 1916, they were found to be fairly common in the sandhill country immediately to the south of the Arkansas River in the vicinity of Holly, Prowers County, where specimens were obtained. Systematic search, however, failed to disclose any evidence of their presence on the north side of the river, where the country is, in fact, quite different and unsuited to their needs. The Arkansas River, therefore, may be considered as the northern boundary of the range of this species.

**Dryobates p. medianus.** DOWNY WOODPECKER.— This variety is given in the Check-List as extending to "eastern Nebraska and Kansas" and it would seem that it is still further extending its range to the westward as a pair of typical specimens were collected on Dry Willow Creek, Yuma County, on Aug. 19, 1915, (C. M. N. H. Nos. 4760 and 4787) forming the first and second records for Colorado.

**Loxia leucoptera.** WHITE-WINGED CROSSBILL. These birds have been reported on previous occasions from Colorado but investigation has failed to show wherein any of these occurrences have been based on specimens actually collected and preserved. An adult male (C. M. N. H. No. 6585) collected at Silver Lake, Boulder County, on May 17, 1917, is therefore, apparently the first record specimen.

**Spizella p. arenacea.** WESTERN FIELD SPARROW. The first record specimen of this subspecies for Colorado is an example (C. M. N. H. No. 6142) taken in the vicinity of Holly, Prowers County, Sept. 21, 1916. It is an immature female and when secured was associated with a mixed flock of *S. pallida* and *S. breweri*.

**Passerella i. iliaca.** FOX SPARROW. The occurrence of this bird in the Clear Creek Valley within a few miles of the foothills near Golden, Jefferson County, was most unexpected. The specimen, an adult male (C. M. N. H. No. 6016) was secured Nov. 1, 1916.

**Helinaia swainsoni.** SWAINSON'S WARBLER. The presence of Swainson's Warbler in Colorado is decidedly unique and extends the possible range of the species several hundred miles to the westward. The specimen forming the record, is an adult female (C. M. N. H. No. 2806) and was secured near Holly, Prowers County, on May 12, 1913, from a dense growth of willows, frequented at that time, by numbers of Bell's Vireos.

**Vermivora luciae.** LUCY'S WARBLER. The fact that the first record for this bird in Colorado was also found breeding, makes it seem possible that the species has been overlooked by other collectors. Two specimens (C. M. N. H. Nos. 3384 and 3385) together with their nest and eggs, were collected at 'Four-corners' in Montezuma County on May 3, 1913.

**Hylocichla mustelina.** WOOD THRUSH. The first record specimen of the Wood Thrush was taken near Holly, Prowers County, on May 12, 1913 (C. M. N. H. No. 2629). It seems not unlikely, however, that the bird is extending its range westward. Confirmatory evidence for this belief is afforded by two additional specimens collected on Dry Willow Creek, Yuma County, on June 24, 1915.—F. C. LINCOLN, *Denver, Colo.*

**Subsequent Nestings.**—I was much interested in reading of Mr. J. K. Jensen's experience (*Auk*, January, 1918, pp. 83-84) with the White-rumped Shrike (*Lanius ludovicianus excubitorides*) at Wahpeton, North Dakota, in 1917, as they are very similar to mine at Hatley, Quebec, in the same year with the Migrant Shrike (*Lanius ludovicianus migrans*) an account of which it had been proposed to add as a postscript to my "A Study of Subsequent Nestings after the Loss of the First," *Auk*, Vol. XXXIV, 1917, pp. 381-393, but which had to be omitted at the last moment owing to unforeseen circumstances. My pair of birds laid four sets of eggs in succession, the first set being taken on May 30, and the last on July 4, thus again giving practically eleven days interval between each set. The first two consisted of six eggs each, the third of five, and the fourth of four, the first nest being in an apple tree twelve feet up, the second in a fir eighteen feet up, and seventy-one yards from the first, the third in the same apple tree as the first only seventeen feet up, whilst the fourth and last was again in an apple tree twelve feet up, and eighty-three yards from the fir tree, the site of the second, and one hundred and fifty-four yards from the apple tree, the site of the first nest. Now the most interesting fact to me was the pigment in these eggs, for whereas with each successive set the size, beauty and construction of the nests fell off, as well as the number of the eggs, the pigment or coloring increased if anything, the last set being equally or more highly pigmented than any of the others. At a Meeting of the Nuttall Ornithological Club held at Cambridge on November 19, 1917, at which I was present, I mentioned the above case. It was suggested by one of the members present (I believe it was Mr. Bangs) that the apparent higher coloring of this last set might be due to an increased thinness of the inner membrane or lining of the shell, or to the thinness of the shell itself, or both. The latter (thickness of shell) I have examined with a microscope through the blow hole as well as I was able, but can detect no apparent difference, but this is no easy matter to decide off hand, and will require much more careful consideration. It seems to me that we have here an interesting field for further investigation, as there really does not appear to be much known or at all events published on the causes and effects governing the pigment of eggs. The English

Sparrow (*Passer domesticus hostilis*<sup>1</sup>) amongst its many other sins, has been responsible to a large extent for the generally prevailing idea that as sets increase pigment decreases (which seems to be the rule in its case for some unexplained reason), but my 'A Study of Subsequent Nestings' already referred to, goes a long way I think to demonstrate that the opposite is the more general rule in the case of other birds. What we really want is a special work dealing with the subject, such as Dr. Bergtold's 'The Incubation Periods of Birds' and Dr. Casey Wood's 'The Fundus Oculi of Birds,' wherein the subjects are fully dealt with and discussed in all their bearings.—H. MOUSLEY, *Halley, Que.*

**The Destruction of Nests by Farming Operations in Saskatchewan.**—During the summer of 1917 from May 1 to June 15 I worked on a 1200 acre grain farm located near a small town, Estlin, sixteen miles south of Regina, the capital of Saskatchewan. This time included the earlier nesting wave which might be said to extend through the last weeks in May and the first in June. It is then that the greatest damage is done to nesting birds through agricultural operations.

The region in which the farm was situated was one vast treeless plain. Natives at one time or another have tried to grow trees and shrubs about their dooryards but these have either died or merely grown to a height of ten or twelve feet. Of course all parts of Saskatchewan are not treeless for in Regina there are fair sized shade trees along the streets and still farther north there are forests. The land is owned in large tracts of a half section or more, the largest of which I heard covering 16 sections. It is under an extensive system of farming with oats, wheat and flax as the staple crops. Most of the land is under cultivation but there is still some in lots of a half to two sections left in virgin prairie. One would naturally expect that the wild ducks and other ground nesting birds would select the prairie for nesting sites, but such was not in accordance with my observations, as I found that the great majority chose the cultivated areas.

The ducks and the Chestnut-collared Longspurs were found to be most abundant; of the former, Pintails were in the lead, with Mallards, Teals, and Baldpates in lesser numbers. Canada Geese did not nest there at all, but I was told that they breed commonly not far to the north. Marsh Hawks and Short-eared Owls were very common, as were Red-winged Blackbirds, Killdeers, and Western Meadowlarks.

The growing season is so short that the ground must be prepared with the greatest speed in the spring, since the large crops and early winters allow little time for fall plowing, thus leaving nearly all to be done just before seeding. We were plowing, disking, harrowing, and drilling grain until the first week in June, while the first duck nest was found on May 6, making at least a full month during which the farming operations may cause the destruction of nests. As above stated the ducks seem to prefer the stubble fields to the prairie, for of the twenty-five nests which I examined all but five were in the former kind of situation; of the remaining five,

<sup>1</sup> See Oberholser, *Auk*, 1917, p. 329.

four were in grass between stubble fields and roads, and only one was on the prairie.

It is a common practice in Saskatchewan to burn off the stubble. This is usually accomplished in the following way: A section of a harrow is dragged about six feet behind a hay or grain rack loaded with straw; a day with a strong wind is selected as soon as the stubble is dry enough to burn freely; one man drives the team slowly along the windward side of the field while another pitches straw onto the fire which is built on the harrow and thus keeps it burning. The stubble catches fire readily and whole sections may be burned over in this manner in a few hours. The usual time for burning over the land is after the first week in May, since before then the stubble is not dry enough. Many nests are destroyed in this way. I found the remains of three duck nests and one Marsh Hawk nest in one burned field. On June 9 I flushed a Mallard from a burned field and on investigation found a much charred nest containing seven smoky eggs all of which were rotten, and yet that poor bird had been incubating those eggs for two weeks since the fire had spoiled them. The straw stacks are also burned at this time. A neighbor was engaged in this work one day, May 24, when he noticed a 'Prairie Eagle' [Ferruginous Rough-legged Hawk] rise and circle around the straw stack he was about to ignite. He climbed to the top of the stack and there found the nest containing five beautifully marked eggs, which he collected and gave to me before burning the straw. As these stacks are very common, in fact they are about the only thing that breaks the horizon, it is probable that many nests are burned with them each spring.

When the stubble is not burned, the fields are usually disked, although sometimes the wheat or oats is drilled right into the stubble without any earlier preparation of the soil. In this way the nests are disturbed by the blades of the disks and drills. Some farmers give their men strict orders to lift the drills or to drive around the nests whenever possible. If the birds happen to be on their nests it is an easy matter to locate them for they usually flush just in front of the horses. I remember twice that the horses had walked over brooding ducks which did not fly up until the disks were about to roll over them. In a case of this sort and also when the birds are not setting, it is practically impossible to see the nests in time to save them. I recollect three nests which were seen barely in time to save them. The first was a Sharp-tailed Grouse which flushed from her nest and fourteen eggs just beside the horses. By the time the horses were stopped the wheel of the drill was within a few inches of the nest and another step would have ruined it. The other two were those of a Desert Horned Lark and of a Killdeer which were similarly discovered when one more furrow by the plow would have turned them under. Occasionally ducks build their nests in sunken spots so that disk-harrows and drills may run over them without damaging the eggs. One nest was run over successively by a disk, a scrub or drag, a drill, and a team of six horses, but miraculously escaped without having even an egg cracked. This bird continued to incubate despite all the interruptions.



Marsh Hawks and Short-eared Owls are fellow sufferers with the ducks. These two birds are very necessary to that country for mice are unusually common and the hawks and owls are about the only means of keeping them in check. All four hawk nests which I found were built in stubble fields and were broken up by farming operations. Five owl nests were located; three of these were spoiled, but the other two were collected before something else could happen to them. Of the 35 duck, hawk, and owl nests which I examined I know of only five in which the eggs hatched. The one redeeming feature lies in the fact that probably the greater part of the second sets hatch and the young mature in good shape, for there are few farming operations at the time when they would be found and there are few natural enemies to interfere with them.—WALTER A. GOELITZ, *Ravinia, Illinois*.

**Goudot's Explorations in Colombia.**—In his recent work on 'The Distribution of Bird-Life in Colombia,' Dr. Chapman refers (p. 11) to a "French collector, resident in Bogotá," who began to send bird skins to Paris about 1838 or 1839. This collector was probably Goudot and that some of his specimens must have reached Europe at least ten years earlier will be evident upon turning to the account of *Chamaepetes goudoti* on p. 197. This species described by Lesson, in 1828, was named in honor of Justin Goudot, a French naturalist and botanical collector, a native of Jura, who secured the type in the Quindio region, in 1827, and who spent many years in Colombia collecting zoölogical and botanical specimens. As information regarding his work is not generally accessible, the following summary may be of interest.

According to La Sègue,<sup>1</sup> from whose brief account the following facts have been mainly derived, Goudot was an attache of the Paris Museum. Nearly a century ago, in 1822, in company with several other Frenchmen he was called to Bogotá by the government of Colombia (then known as New Grenada), to assist in founding various scientific establishments. For five years he remained in the service of the government collecting in different parts of the country. In 1823 he began work on the coast of Venezuela in the vicinity of Porto Cabello, then went to Santa Marta and ascended the Magdalena River to Bogotá. In the following year he worked eastward across the cordillera to the plains of Meta and then southward crossing the Ariari and the Guayabero, two branches of the upper Orinoco. He then returned to Bogotá and in 1825 directed his course northward along the cordillera to the valley and emerald mine of Muzo. In 1826 he collected in the mountains southwest of Bogotá, in the vicinity of the natural bridge of Icononzo or Pandi. In 1827 he resigned from the service of the government but continued his work of collecting natural history specimens. He crossed the valley of the Magdalena to the west in order to explore the rich vegetation of the Quindiu region and it was on this trip undoubtedly that he secured the type of

<sup>1</sup> La Sègue, A., Musée Botanique de M. Benjamin Delessert, pp. 471-472, Paris, 1845.

*Chamaepetes goudoti*. Two years later, in 1829, he visited the Pyramid of Tolima, one of the highest peaks of the northern Andes. In 1830 he crossed the central cordillera and visited the northern part of the Cauca Valley. On his return two years later he recrossed the cordillera farther north in the mountains of Hervé. In 1835 he explored the valley of the upper Magdalena south of Honda. During the next few years he was obliged to devote his attention to other work but employed his spare time in studying the natural resources of the regions where he lived. In May 1842, he started on his return to Europe. After descending the Magdalena he went to Santa Marta, visited the mountains in the interior, and while delayed at Carthagena, examined the flora between that point and Turbaco. Finally he reached Havre, France, in December, 1842.

During the four years from 1843 to 1846 Goudot published a dozen papers on the botany and zoölogy of Colombia including the first account of the nesting of the Cock of the Rock. According to Mulsant and Verreaux<sup>1</sup> he returned to Colombia after 1848 where he died. Although known chiefly as a botanical collector, he collected many zoölogical specimens including insects and a series of scorpions and probably sent to Europe many of the Colombian birds that were described by contemporary French ornithologists. It is possible also that under his instructions the natives learned to collect birds for the European market and thus began the shipment of Bogota skins which later developed into such an extensive traffic to supply museums and the millinery trade.—T. S. PALMER.

**Unusual Dearth of Winter Birds.**—Judging by my own experience at Hatley, and that of friends and correspondents in such widely scattered places as Toronto, Montreal, Boston, Philadelphia and Washington, the winter season of 1917-18, will no doubt go down to posterity as a very remarkable one, not only for its great severity, but also for its great dearth of winter birds. Nothing like it has been seen in my time at Hatley and long previous to that so I am told by the oldest inhabitants, the thermometer standing for long periods at a time far below zero, even up to 20° and 30° in the day time and 45° at night. The local papers have contained notices of the great dearth of birds, and that from people not given to the study of Ornithology, but who perforce have had the matter thrust upon their attention. I myself have not seen any Redpolls, Pine Siskins, Pine or Evening Grosbeaks, the only birds in evidence being a few small flocks of Snow Buntings, and an occasional Northern Shrike, with a Goshawk on December 18. An easterly gale in the first week of December however, was responsible for driving in at least three Brünnich's Murres and one Ring-billed Gull, two of the former being taken at North Hatley on December 10, and one at Hatley on January 9, whilst the Gull was taken near Massawippi early in December, all of which birds I saw and identified in the flesh.—H. MOUSLEY, *Hatley, Que.*

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<sup>1</sup> Histoire Naturelle des Oiseaux-Mouches, II, p. 66, 1876.

**Correction.**—In mentioning the 'Preliminary List of the Birds of Tennessee' in the January 'Auk,' p. 103, Mr. W. D. Howser was credited with the compilation and editing. We now learn that this labor was performed by Mr. A. F. Ganier, Curator of the Tennessee Ornithological Society.—WITMER STONE.

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### RECENT LITERATURE.

**Chapman's 'Distribution of Bird-Life in Colombia.'**—The appearance of Dr. Chapman's report on the 'Distribution of Bird-Life in Colombia'<sup>1</sup> more than meets our expectations. We realize at once that it is the most important contribution ever made to the subject of which it treats but we further recognize in it the completion of a definite plan, clearly conceived and carefully carried out—an accomplishment that must be as much of a gratification to the author as it is to those who consult the volume. Too often, especially in America, important explorations have been made and extensive collections obtained which through force of circumstances remain unreported, except in so far as a series of 'preliminary descriptions' of new forms may be regarded as a report, which in their brevity, are often as much of a hindrance as they are a help to science.

Dr. Chapman assembled his collections, published his descriptions of new species with praiseworthy detail and now presents us with a comprehensive report of the entire investigation, with discussions, not only of the relationship of the birds but of the varied characters of the country they inhabit—its forests, rainfall and other environmental conditions, and finally his deductions as to the limits of the present day life zones of Colombia, their history and the probable origin of the bird-life of the country. Needless to say this is no small task especially when we read that: "so indefinitely is the physiography of the country diversified that our entire time in Colombia might have been devoted to a single mountain range and still not have given us the information needed to map its zones and faunas with a thoroughness which would begin to express all the facts and factors involved," and the author modestly adds: "we must therefore, leave to future workers the task of filling in the details...with a hope that they will find the zonal and faunal boundaries here proposed at least fundamentally correct." This hope we are sure will be more than realized.

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<sup>1</sup> The Distribution of Bird-Life in Colombia. A Contribution to a Biological Survey of South America. By Frank M. Chapman. Bull. Amer. Mus. Nat. Hist., Vol. XXXVI, 1917. pp. i-x, 1-729; plates I-XLI; text figures, 1-21. New York, 1917.

Up to this time the writers on Colombian ornithology have based their studies almost entirely upon the collections of others, mainly natives, who furnished no information regarding the country in which the specimens were obtained — usually not even definite localities, so that no intelligent consideration of the range or distribution of the species was possible. Dr. Chapman began his investigation in 1911 with a personal trip from Buenaventura on the Pacific coast to Baranquilla on the Caribbean Sea, traversing nearly the whole length of the country down the Cauca and Magdalena Valleys, and crossing two of the three ranges of the Colombian Andes, while two years later he made another trip to the Bogota region, crossing the third range to Villavicencio at its eastern base. He thus obtained an intimate personal knowledge of the country as well as of its most characteristic birds, and was able to direct intelligently the operations of his assistants on the six additional expeditions which they conducted, so as to secure the most important returns; while by his personal association with his men in the field on the two trips above mentioned, he was able to instruct them in the object of the explorations and the best methods by which they might be attained.

Bogota, as is well known, has been since about 1838 a shipping point for bird skins. While these were primarily intended for millinery purposes many found their way into the hands of ornithologists in France and England and hundreds of new species were described with Bogota as their type locality. Of later years it has become evident that most of these specimens did not come from the immediate vicinity of Bogota at all but were brought there by natives who secured them at various more or less remote spots often in quite different life zones or faunas. The determination of the actual habitat of such species became, therefore, a primary necessity in working out the distribution of bird-life in Colombia, and in ascertaining the proper relationship of the species and subspecies, and this led to Dr. Chapman's careful investigation of this critical region — a piece of work which in itself is a contribution of the first importance to neotropical ornithology. We cannot within the limits of this notice consider in detail the numerous interesting problems of local distribution presented by Dr. Chapman, but a few of his more general conclusions may be stated. In the first place he considers that the remarkable similarity in the fauna of the Pacific Tropical zone in Colombia and Ecuador, and that of the Amazonian forest, indicates that these regions, now totally separated, are parts of a formerly continuous area and that their fauna is pre-Andean. The evolution of new forms has here, he contends, been practically at a standstill and therefore many species occur on both sides of the mountains today showing no differentiation. The tremendous upheaval of the Andean chain on the other hand has been responsible for the rapid evolution of a host of new forms in accordance with the great changes in topography in the area affected.

Above the tropics Dr. Chapman recognizes three zones: the Subtropical; the Temperate; and the Paramo. The fauna of the first has been derived



from the Tropical zone immediately below while the species characteristic of the last two have originated in the same zones at sea-level farther south. Many of these species moreover range north over the entire temperate zone with little or no modification which should be expected, since they have nowhere left the peculiar environment of their original zone. Species of the Subtropical zone on the other hand have pushed up from their original Tropical zone into an entirely different environment with the result that they have in nearly every instance been materially modified. Or as Dr. Chapman puts it: "Uniformity of life increases with altitude." The Cauca Valley, the fauna of which differs decidedly from that of the humid Pacific coast, Dr. Chapman considers to have been under water until post-tertiary time so that its bird-life is of comparatively recent origin.

Another interesting fact brought out in the work before us is the curious break in the Subtropical forest zone, which extends along the Andes to northern Colombia and is then lacking until we reach the high mountains of western Panama and Costa Rica, where the same types, sometimes the very same species, reappear. This break Dr. Chapman calls the "Panama fault," and cites evidence to show that a former connecting range of high mountains, which carried the Subtropical zone over the present tropical interval, has been entirely reduced by erosion and subsidence in comparatively recent geological time.

The chapters treating of these and other distributional problems, with their host of original facts and faunal lists of species will be studied with the deepest interest by all zoögeographers, while the itineraries of the eight expeditions, illustrated as they are by numerous admirable photographs, are fascinating reading for anyone interested in travel and exploration.

The systematic portion of the report based upon the collection of 15,775 skins secured by Dr. Chapman and his assistants, treats of 1285 species and subspecies of which 22 new species and 115 new subspecies have been described by the author in the course of his studies of this extensive material. Most of these were described in previous papers but eleven appear in the present volume for the first time, while for convenience the earlier diagnoses are all reprinted here. One of the novelties discovered by the expeditions is named *Troglodytes musculus neglectus* (p. 520). This name, as has been pointed out to us by Dr. Charles W. Richmond, is pre-occupied by *Troglodytes neglectus* Brooks, an Old World form of Winter Wren, and it becomes desirable to give it a new name. It seems to us that *Troglodytes musculus chapmani* would be a fitting name for this Wren and we therefore propose this as a substitute for *T. m. neglectus* Chapman.

The various species in Chapman's report are numbered in accordance with Brabourne and Chubb's 'Birds of South America.' The synonymy includes a reference to the original description of the species with type locality, and other references to its occurrence in Colombia. This is followed by critical remarks upon range and relationship and a list of localities from which specimens were secured. Dr. Chapman estimates that the whole number of Colombian birds would be about 1700. While we fully



appreciate his motives in limiting his list strictly to species which were encountered by his expeditions, we cannot but regret — even though our attitude be admittedly selfish — that he did not in some way include at least the land birds reported by others from Colombia, thus making his report monographic. The knowledge of the relationships of such forms, which he must have acquired in working up his collections, would have been of the greatest value to others.

The best test of a work of this kind is the actual use of the volume and having had occasion recently to study two neotropical collections, from adjacent areas, in which study Dr. Chapman's work was extensively used, the writer can testify to the admirable style of its arrangement and to its thorough accuracy.

As regards nomenclature, Dr. Chapman adopts subspecies rather more liberally than most recent writers — that is to say, he treats certain forms as subspecies which others would regard as of full specific rank. This is a practice of which we thoroughly approve, since to our mind a name should be made to express as much as possible, and if one form is clearly a derivative of another, the trinomial appellation showing this relation carries more information than would the binomial, while the fact that actual intergradation between the two has not been proven is not of sufficient importance to warrant an expression in nomenclature. In regard to genera, Dr. Chapman expresses himself at some length against their undue multiplication and rejects *Eupsychortyx* as not separable from *Colinus*; and *Dictiopicus* as not distinct from *Dryobates*. While here again we are in sympathy with our author's attitude it seems that while sacrificing the above mentioned genera, he retains quite a number apparently not any better differentiated. This question must probably be settled by convention as genera are matters of opinion and their relative importance cannot be settled by any criterion or rule. The opinion of one author is probably as good as that of another and all will differ to some extent.

There are many other portions of this admirable work upon which we are unable here to comment — the discussion of climate and precipitation and their influence on the formation of life zones; the formation of the cloud forests; the various faunas into which the zones are divided, etc. Enough has been said however, to show the comprehensive character of the work, and the broad way in which the subject is handled.

Mention must however, be made of the numerous excellent maps and distributional charts and the four attractive colored plates from paintings by Louis Agassiz Fuertes, who accompanied Dr. Chapman upon the two expeditions in which he took part — also, the energy and ability of the corps of collectors to whose efforts the success of the several expeditions was largely due: W. B. Richardson, Leo E. Miller, Arthur A. Allen, Geo. K. Cherrie, Paul G. Howes, Geoffroy O'Connell, Thos. M. Ring, and Howarth Boyle.

This volume is entitled "A Contribution to a Biological Survey of South America." We feel sure that it will be the wish of every naturalist who

reads it, that when this terrible war is over and Dr. Chapman resumes his ornithological work, he may be able to prepare other similar contributions for which much material is already available at the American Museum. Surely no one today is better equipped for the task.— W. S.

**Gee and Moffett's 'Birds of the Lower Yangtse Valley.'** — This little volume,<sup>1</sup> apparently reprinted from the columns of a newspaper, is a well prepared account of the more common birds of the region of which it treats, intended to meet the needs of those who wish to become familiar with the wild bird life of China. There is a good description of each species with an outline of its general distribution, an account of its nest and eggs and some general notes on its habits and history. The material is compiled from various reliable sources and includes as well the observations of the authors and those of the late Dr. Paul D. Bergen.

"The greatest lack in ornithological literature of China," say the authors, "is not the scientific descriptions of species — perhaps few remain yet to be described — but the sort of careful popular study that has taught us so much of the intimate ways of the birds of America and England." As an attempt to fill this want the present work is a very praiseworthy effort, and will be welcomed alike by those who are able to study Chinese birds on the spot and those in far away lands, who wish to know something of the everyday familiar birds of this interesting country.— W. S.

**Mathews' 'Birds of Australia.'** — Part six<sup>2</sup> of volume six of this notable work is now before us, completing the treatment of the Parrots. Eight species of the genera *Neonannodes*, *Neophema*, *Lathamus*, *Melopsittacus*, *Pezoporus* and *Geopsittacus* are figured and described. There is also an appendix giving the description of *Platycercus elegans fleuriensis* Ashby, already published in 'The Emu,' and some supplementary notes by the describer. Also a correction in which the generic name *Suavissitta* (p. xix) is proposed for *Nannopsittacus* Matthews, preoccupied by *Nannopsittaca* Ridgway.

In the main text of this part we find the following new name proposed: *Neonannodes chrysostomus cyanopterus* (p. 446), Victoria.— W. S.

**Kalmbach on the Crow and its Relation to Man.** — The continued demand for information regarding the economic value of the Crow and the exhaustion of the supply of previous bulletins on the subject, have resulted

<sup>1</sup> A Key to the Birds of the Lower Yangtse Valley with Popular Descriptions of the Species Commonly Seen. By N. Gist Gee, Soochow University and Lacy I. Moffett, Kiangyin. Shanghai: Shanghai Mercury Limited, Print. 1917. pp. 1-221, with index (i-xix) and errata (iii-iv).

<sup>2</sup> The Birds of Australia. By Gregory M. Mathews. Vol. VI, Part VI. December 11, 1917.

in a new investigation by Mr. E. R. Kalmbach,<sup>1</sup> Assistant Biologist of the Biological Survey. A large amount of new and more recent information has been collected through correspondence and the number of stomachs upon which conclusions on the food habits of the bird are based, has increased from 909 at the time of the previous report to 2118.

The matter is clearly and concisely presented under various headings and the results and conclusions summarized at the close of the report. The omnivorous habits of the Crow and the resulting complexity of the problem of determining its worth to man can readily be appreciated when we learn that no less than 656 different items were detected in the stomachs examined. After carefully weighing all the factors in the case, Mr. Kalmbach concludes that while the Crow undoubtedly does much damage in destroying corn and other crops, poultry, nestlings and eggs of wild birds, etc., nevertheless the enormous amount of good that it does in destroying noxious insects, especially in the early spring, when they are at the lowest ebb of their life cycle, constitutes a benefit that we cannot afford to dispense with. Therefore he considers that while the bird should not be protected no efforts directed toward its extermination should be tolerated. In other words it should be kept at about its present abundance and should be allowed to be shot whenever it is found doing damage.

In the Delaware Valley, according to the reviewer's experience, there seems no doubt but that the Crow has decreased considerably during recent years, owing apparently to the molestation of the roosts, and if this condition prevails over other parts of its range, it may be that by the time another report on the bird's economic value appears, it will be necessary to give it some measure of protection. Ornithologists would be sorry to see a bird of such varied interest and historical association, seriously reduced in numbers, when there is no more call for such action than Mr. Kalmbach has shown, and we sincerely hope that his practical recommendations will be accepted throughout the country.

This excellent report is illustrated by an admirable colored plate of the Crow from a painting by the author, a map of the United States locating 174 Crow roosts, and a diagram showing graphically the food of the Crow throughout the year.—W. S.

**Arthur's 'Birds of Louisiana.'**—This list published as a 'Bulletin of the State Department of Conservation'<sup>2</sup> is issued in response to the demands of schools, nature teachers and others interested in extending a knowledge of the wild birds of the state. Mr. Arthur has done his work well, giving us an authoritative list of species according to the A. O. U.

<sup>1</sup> The Crow and its relation to Man. By E. R. Kalmbach. U. S. Dept. of Agriculture, Bulletin No. 621. February 16, 1918. pp. 1-92.

<sup>2</sup> The Birds of Louisiana. Bulletin 5, State of Louisiana, Department of Conservation, M. L. Alexander, Commissioner. [By Stanley Clisby Arthur, Ornithologist.] pp. 1-80. New Orleans, January 1918, with several maps and other text figures.

'Check-List,' with the several local vernacular names and brief comments on the time of occurrence, relative abundance, habits and more important color marks. No less than 368 species and subspecies are listed in this pamphlet, an increase of forty-five over the list of Messrs. Beyer, Allison and Kopman, published in 'The Auk' (Vols. XXIII, XXIV and XXXII).

An introduction of eight pages considers the history of Louisiana bird life, migration and other general topics, while a number of small maps and half-tone text figures illustrate this interesting and welcome publication.—W. S.

**Murphy on the Natural History of the Mexican Portion of the Colorado Desert.**<sup>1</sup>—Mr. Murphy made two trips into this interesting region in March 1915, for the purpose of securing specimens of the Lower Californian Pronghorn and other desert animals for the museum of the Brooklyn Institute. In the present paper he presents some general information about the region, an exceedingly interesting and well illustrated narrative of his trips and an annotated list of the birds, as well as some account of the Pronghorn.

The list of birds comprises 134 species and includes besides those observed by Mr. Murphy, a number of others which were secured or observed by Mr. Samuel N. Rhoads on a trip through this country in 1905 (Proc. Acad. Nat. Sci. Phila., 1905, pp. 679-690). Mr. Murphy's excellent paper forms a valuable supplement to Dr. Grinnell's recent report on the fauna of the Lower Colorado Valley, farther north.—W. S.

**Batchelder on New Birds from Newfoundland.**<sup>2</sup>—An examination of a considerable series of Ovenbirds and Yellow Warblers taken during the breeding season in Newfoundland, has convinced Mr. Batchelder that they are separable subspecifically from individuals from the rest of eastern North America, and he therefore proposes for them the names, *Seiurus aurocapillus furvior* (p. 81) and *Dendroica aestiva amnicola* (p. 82) respectively. In a general way these new forms are darker in coloration than the 'typical' races.

The establishment of very slightly differentiated geographical races in the east will soon bring us face to face with some of the problems that have troubled our friends in California and other parts of the west, in the matter of sight identifications. The advent of a "Brown-headed Chickadee" in the eastern states a year ago, which could not be subspecifically identified without collecting the specimen, caused great speculation as to how observations on the bird should be recorded and as these Newfoundland Oven-

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<sup>1</sup>Natural History Observations from the Mexican Portion of the Colorado Desert. By Robert Cushman Murphy. Abstract Proc. Linnæan Soc. of New York, Nos. 24-25, 1917. pp. 43-101, plates I-VI.

<sup>2</sup>Two Undescribed Newfoundland Birds. By Charles Foster Batchelder. Proc. New England Zool. Club, VI, pp. 81-82. February 6, 1918.



birds and Yellow Warblers in all probability pass down our Atlantic coast in migration we shall in future be in doubt as to which form we have seen. Meanwhile it will be interesting for those who have good series of migrant specimens to see whether they can detect the new forms among them.—W. S.

**Murphy on a New Albatross.**<sup>1</sup>—Under the name *Diomedea sanfordi* (p. 861), Mr. Murphy describes a single specimen of an Albatross secured at sea forty miles off Corral, Chile, by R. H. Beck who was engaged in obtaining specimens for the Brewster-Sanford Collection. The specimen is compared at length with *D. exulans* and the difference in the structure of the nostril is so great that in Mr. Murphy's opinion the two should be separated subgenerically, and he therefore erects the subgenus *Rhothonia* (p. 861) for his new species.

Whether Mr. Murphy compared his specimen with *D. chionoptera* Salv. we do not know but in the last number of the 'Bulletin' of the British Ornithologists' Club, Lord Rothschild, in commenting upon Mr. Murphy's paper, identifies his new species with this latter form, citing records to show that it ranges widely after the breeding season which would make its occurrence off the coast of Chile not unlikely.—W. S.

**Shufeldt on Fossil Birds from Vero, Florida.**<sup>2</sup>—This is an elaboration of a previous report on the same material published in 'The Journal of Geology' for January-February, 1917, pp. 18-19, and already noticed in these columns. A reference to the present publication seems desirable in order to prevent future complications by calling attention to the fact that the new species described in the former paper all appear as "sp. nov." in this one as well, and may easily be quoted from it in mistake. Such practice is decidedly reprehensible. As the present paper is dated July 20, 1917, at the end of the text, it would seem that the author had ample time to give the proper references to the earlier publication had he so desired.—W. S.

**Publications on Bird Protection.**—From the Winter Number of 'Bird Notes and News' we learn that Venezuela has passed a law to stop the killing of Egrets for their plumes, limiting the traffic to cast feathers. In England great damage has been done to the native birds by the indiscriminate destruction of both birds and eggs by members of the 'Sparrow Clubs' which were organized for the purpose of reducing the numbers of the House Sparrows but whose activities, through ignorance, were extended to other species as well.

<sup>1</sup>A New Albatross from the West Coast of South America. By Robert Cushman Murphy. Bull. Amer. Mus. Nat. Hist., Vol. XXXVII, pp. 861-864. December 10, 1917.

<sup>2</sup>Fossil Birds found at Vero, Florida, with Descriptions of New Species. By R. W. Shufeldt. Ninth Ann. Rep. Fla. State Geol. Survey, 1917, pp. 35-42.



'California Fish and Game' for January tells of the successful use of bombs and fireworks in frightening migrant birds from the rice fields and has an admirable article on the value of wild birds by Mr. J. G. Tyler.

The 'Report of the Chief of the Bureau of Biological Survey' of the U. S. Department of Agriculture contains brief mention of investigations as to the food habits of the Starling which indicate that this bird has some desirable qualities and is not all bad. The question remains however, whether in spite of his destruction of ground insects he is not from sheer force of numbers crowding out of existence many of our native species in areas inhabited by him. Another pamphlet issued by the Biological Survey 'How to Attract Birds in the East Central States' is by W. L. McAtee and is similar to those already published for other sections of the country. The 'Audubon Bulletin' of the Illinois Audubon Society for the winter of 1917-1918 and the 'Seventh Annual Report of the New Jersey Audubon Society' are full of interesting matter concerning bird protection and bird study in these states and the former has an anonymous biographical sketch, with portrait, of Mr. Robert Ridgway, which will be read with great pleasure by everyone interested in the development of ornithology in America.

'Current Items of Interest' prepared by Mr. Henry Oldys contains an account of a Sparrow campaign at Davenport, Iowa, which seems to have been more successful than the English one already mentioned.

Cornell University has issued a circular announcing courses of instruction on wild life conservation and game breeding during 1918, while from the National Association of Audubon Societies come some attractive 'Audubon Pocket Bird Collections'—clever colored drawings by E. J. Sawyer of mounted specimens, represented as in a case with a 'catalogue' on the back arranged by Dr. Frank M. Chapman.

The 'Report of the National Zoölogical Park' contains an interesting note on the park as a bird sanctuary and a list of some 180 species of birds now living in the collection.—W. S.

**Swarth on Jays of the Genus *Aphelocoma*.<sup>1</sup>**—The much discussed California Jays are again reviewed in this paper with the result that *Aphelocoma c. obscura* of the A. O. U. 'Check-List' is found to be identical with typical *A. californica* from Monterey but the bird of interior California generally supposed to be *californica* is different and is the same as *A. c. immanis*, described from Linn Co., Oregon, by Dr. Joseph Grinnell. All this seems to hinge upon the question as to which of two forms a type from somewhat intermediate territory belongs, and we have no doubt Mr. Swarth's deductions are correct. We would therefore be still in accord with the 'Check-List' so far as the number of races of *A. californica* is concerned were it not for the fact that Mr. Swarth comes to the conclusion

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<sup>1</sup> The Pacific Coast Jays of the Genus *Aphelocoma*. By H. S. Swarth. University of California Publ. in Zool., Vol. 17, pp. 405-422. February 23, 1918.

that the birds from the coast region north of San Francisco Bay are different from either of the above. These he separates as *A. californica oocleptica* (p. 413), type locality Nicasio.

He also differs from Dr. Oberholser's recent conclusion that *A. hypoleuca* is merely a race of *A. californica*, as maintained in the A. O. U. 'Check-List,' and would give it full specific rank. The facts in regard to this group would seem to be now before us and any difference of treatment must be due to personal opinion.—W. S.

**Wetmore on *Palaeochenoides mioceanus* Shufeldt.**<sup>1</sup>—This name was based upon the fossilized distal end of the right femur of a bird which Dr. Shufeldt considered as related to the Anseres. Quoting from Dr. Shufeldt's paper we find "that this femur never belonged to any bird at all related to *Sula*, or to any of the Herons, or to *Pelecanus*, all of which have femora possessed of some characters, which, though not of wide difference, are quite sufficient to constitute discriminating ones, and to point to the fact that this great extinct fowl did not belong in any of those groups, as we know them, osteologically."

Now comes Mr. Wetmore with the results of another careful examination of this same bone fragment and we read that of five characters of the femur "*Palaeochenoides* agrees with the *Steganopodes* in four, while in only one does it approach the Anseres....and it is referred without question to the *Steganopodes*." He further suggests that it was a Pelican-like bird of a somewhat generalized type showing resemblances to the Gannets and remotely to the Cormorants and Darters.

It would seem desirable that those who name fossil birds should not fashion their generic names on those of existing birds as it is embarrassing to find them shifted into other families or orders where the name becomes somewhat of a misnomer!

Mr. Wetmore's argument in the present case seems much the more convincing of the two that have been presented.—W. S.

#### **Economic Ornithology in recent Entomological Publications.—**

Some interesting original observations of the relations of birds to insect pests have recently been published by entomologists. They relate to the following insects:

Potato aphid (*Marcrosiphum solanifolii*). This new pest, because of the thoroughness and insidiousness of its attacks, is popularly known as the "Kaiser bug" in Ohio where it destroyed many potato fields. The following birds were observed actively feeding on the aphids: Chipping Sparrow, Quail, and English Sparrow.<sup>2</sup>

<sup>1</sup> The Relationships of the Fossil Bird *Palaeochenoides mioceanus*. By Alexander Wetmore. The Journal of Geology, XXV, No. 6, Sept.-Oct., 1917.

<sup>2</sup> Houser, J. S., Guyton, T. L. and Lowry, P. R., Bull. 317, Ohio Agr. Exp. Sta., Nov. 1917, p. 80.

The sweet-potato leaf-folder (*Pilocrocis tripunctata*). This Pyralid moth larva was found to be very injurious to sweet potatoes near Brownsville, Texas. Mr. M. M. High who studied it there, states that the Boat-tailed Grackle, feeds upon this species among "a number of insects that attack truck crops and particularly on larvæ.... Observed it first feeding on the cabbage looper (*Autographa brassicae* Riley) in 1913, two days after cabbage had been sprayed with an arsenical. Some species of larvæ after being poisoned have a habit of crawling to the top of the leaves of the plant upon which they are feeding before dying, and here they fall easy prey to the grackle. The poison apparently does not seriously affect the birds, since none have been found dead in the vicinity of sprayed crops." <sup>1</sup>

The pecan-leaf case-bearer (*Acrobasis nebulella*). The larva of this Phycitid moth is a serious pest in the southern part of the pecan growing district. "Three species of birds — the Blue Jay,... Mockingbird,... and the Orchard Oriole... — have been observed feeding upon the larvæ of the pecan-leaf case-bearer. These birds, as well perhaps as those of other species, do much to check the ravages of this pest, and their protection in the pecan orchard should be encouraged. The Blue Jay very likely is more beneficial than harmful to the pecan grower. In the writer's opinion the good that this bird does in feeding upon injurious pecan insects more than offsets the injury that it is accused of doing in the fall of the year, when it may take a few nuts from the pecan trees." <sup>2</sup>

The fall webworm (*Hyphantria textor*). The facts concerning the seriousness and ubiquity of this pest need no restatement. Dr. C. Gordon Hewitt informs us that, "The study of the natural control of the fall webworm was extended to Nova Scotia in 1916, and it is interesting to record that of the different factors operating in the reduction of this insect the Red-eyed Vireo, *Vireosylva olivacea* L., appears to be the most important. It was estimated that about 40 per cent of the larvæ had been destroyed in the webs by this bird at the five observation points." <sup>3</sup> Other really effective bird enemies of the fall webworm, on the basis of their record in the United States are the Yellow-billed Cuckoo and Baltimore Oriole.

The emperor moth (*Samia cecropia*). This large moth, while attracting considerable attention on account of its size can hardly be classed as a pest. Dr. Hewitt's comment on its bird enemies, nevertheless, is of interest. "Studies in the natural control," of this moth, he says, "have been made, and... it was found that most of the cocoons were destroyed by woodpeckers" (op. cit., p. 9).

West Indian mole cricket (*Scapteriscus vicinus*). In a recent important bulletin <sup>4</sup> on this "most serious pest of general agriculture in Porto Rico,"

<sup>1</sup> In Bull. 609, U. S. Dept. Agr., by Thos. H. Jones, Nov. 22, 1917, p. 9.

<sup>2</sup> Gill, J. B., Bull. 571, U. S. Dept. Agr., Dec. 15, 1917, pp. 14-15.

<sup>3</sup> Rep. Dominion Entomologist, 1917, p. 8.

<sup>4</sup> Van Zwaluwenburg, R. H., Bull. 23, Porto Rico Agr. Exp. Sta., Feb. 12, 1918, pp. 18-19.

full consideration is given to bird enemies. Wetmore's account<sup>1</sup> of the subject is quoted almost in full and the statement made that "The most efficient enemies of the changa are to be found among the native birds."—W. L. M.

**Protection of Military Carrier-Pigeons.**—An interesting article<sup>2</sup> by Professor Henri Blanc, informs us that the Military and Interior Departments of the Swiss government in 1915 demanded that a warfare be carried on throughout Switzerland against birds of prey capable of destroying Carrier Pigeons in flight with messages. In following this order some of the cantons offered bounties of as much as four francs per bird. From Sept. 11 to Dec. 13, 1915, Professor Blanc states, 86 hawks were presented for identification at the museum of which he is curator. Among these were 11 *Cerchneis tinnunculus* and 17 *Buteo vulgaris* which are deemed especially useful species. Examination of the stomachs of some of these birds revealed only small rodents in those of the former species and large grasshoppers and small rodents in those of the latter.

Examination of the stomachs of *Accipiter nisus*, *Astur palumbarius* and *Falco peregrinus* yielded only remains of small birds, and in one case of a chicken. "On the basis of these autopsies," the author says, "one must conclude that the rapacious birds killed in the canton of Vaud in 1915 have not done the assumed damage to the carrier pigeons of the army." The total number of birds of prey killed in Switzerland in 1915 was 806, of which 506 were *Accipiter nisus*, 159 *Astur palumbarius* and 35 *Falco peregrinus*. This is a very high percentage (more than 80) of destructive bird hawks, and shows greater success in restricting slaughter to these species than has been attained in similar campaigns in the United States.

A recent issue of the Official Bulletin<sup>3</sup> informs us that the United States army also is losing some of the carrier pigeons in training, but from another cause. The Bulletin says "Any pigeon in the air may be a carrier pigeon flying from a loft under government supervision. Its destruction may be a serious loss to the American Army. All persons therefore, are urged to refrain from the shooting of pigeons and to discourage the practice." The birds bear bands with the legend "U. S. A.—18" and persons coming into possession of any birds so marked are requested to report the fact to the Chief Signal Officer, Land Division, Washington, D. C.—W. L. M.

**Birds Probably not Distributors of Hog Cholera.**—The following is quoted from the Annual Report of the Chief of the Bureau of Animal Industry, U. S. Department of Agriculture for 1917 (p. 48). "The belief that birds play an important part in the spread of hog cholera led to some

<sup>1</sup> Bull. 326, U. S. Dept. Agr., 1916, pp. 9, 10, 21, 31, 32.

<sup>2</sup> Destruction des Oiseaux rapaces diurnes dans le canton de Vaud et en Suisse pendant l'annee 1915. Bull. Soc. Vaud. Sci. Nat., 51, 1917, pp. 315-319.

<sup>3</sup> Washington, D. C. Feb. 5, 1918, p. 8.



experiments with pigeons. Suitable pens were prepared facing each other, and the space between was inclosed by wire netting. The front of each pen was left open, so that pigeons which were placed in the inclosed space between the pens could have easy access to the pens on either side. In one pen pigs sick of cholera were kept and in the other there were healthy, nonimmune pigs. When the sick pigs died they were replaced with others, so that the disease was kept constantly present in one of the pens, and this pen was not cleaned during the course of the experiment. The healthy pigs were changed from time to time. The pigeons constantly flew from the infected pen to the opposite pen containing the well pigs, which was only 10 feet distant. In the different experiments healthy pigs were exposed to infection through the medium of the pigeons for from 30 to 40 days. In no case was the disease transmitted by the pigeons, although it is evident that every opportunity was afforded for this to occur. The exposed pigs were proved susceptible by subsequent exposure to cholera. While these experiments can not be said to prove that it is impossible for pigeons to carry hog cholera, it seems fair to conclude that the disease is probably not often carried from one farm to another in that way."

These experiments under conditions much more favorable to the transmission of the disease than ever occur in actual hog raising practice, would seem to indicate that birds, not carrion-feeders, probably never distribute the causative agent of hog cholera on their feet or other parts of their bodies. The relations of the carrion feeders to the disease have previously been discussed in 'The Auk,'<sup>1</sup> and evidence adduced that they have little importance in spreading stock diseases. Nevertheless a violent campaign has been waged against buzzards and crows especially in farm journals, in southern states, and protection has been denied buzzards by legislative enactment in Alabama, Louisiana, South Carolina, Tennessee, and Texas. All this on a suspicion which was controverted by facts available at the beginning of the campaign, and which the evidence since accumulated still further discredits.—W. L. M.

#### The Ornithological Journals.

**Bird-Lore.** XX, No. 1. January-February, 1918.

Photographs of Falkland Island Bird-Life. By Rollo H. Beck.—These are some of the pictures which appeared recently in the 'American Museum Journal' but they do not compare with the latter in quality of printing.

'Pauperizing' the Birds. By Henry Oldys.—A clever article discussing the possibility of diverting birds from insect diet by the introduction of feeding stations. The evidence is against such a theory, so that we may go on providing food with a clear conscience.

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<sup>1</sup> 30, No. 2, April 1913, pp. 295-8.



A New Feeding Slab. By W. E. Saunders.—A slab that English Sparrows will not frequent.

The articles on migration and plumages treat of the Tanagers with a colored plate by Fuertes, in which by the way, the female and winter males of the Scarlet Tanager are altogether too yellow. The usual Christmas lists cover twenty-six pages, while exactly half of the magazine is devoted to reports of Audubon Societies.

**The Condor.** XX, No. 1. January–February, 1918.

The Barrow Golden-eye in the Okanagan Valley, B. C. By J. A. Monroe.

The Destruction of Birds at the Lighthouses on the Coast of California. By W. A. Squires and H. E. Hanson.

Early Autumn Birds in Yosemite Valley. By Joseph Mailliard.

A Note on the Tracheal Air-sac in the Ruddy Duck. By Alexander Wetmore.

Notes on Some Birds from Central Arizona. By H. S. Swarth.

A Return to the Dakota Lake Region. By Florence Merriam Bailey.

Breeding Birds of Bexar County, Texas. By R. W. Quillin and Ridley Holleman.

**Wilson Bulletin.** XXIX, No. 4. December, 1917.

A Day with the Birds of a Hoosier Swamp. By B. W. Evermann.

Keeping Field Records. By A. F. Gainer.

The Saving of a Pond and the Resulting Bird List. By Howard C. Brown.

Winter Birds about Washington, D. C. By W. L. McAtee, E. A. Preble and Alexander Wetmore.—Forty-eight species seen on December 30, 1916.

Another Unusual Laying of the Flicker. By B. R. Bales.—Thirty-nine eggs in the same number of days.

**The Oölogist.** XXXV, No. 1. January, 1918.

Ivory-billed Woodpecker not Extinct. By J. B. Ellis. One pair seen at Everglade, Florida in the spring of 1917.

The Buffle-head in the Okanagan Valley, B. C. By J. A. Monroe.

**The Ibis.** X Series, VI, No. 1. January, 1918.

Notes on *Embernagra platensis* and its Allies, with the Description of a new Species. By Charles Chubb.—*Embernagra gossei* (p. 9), Lujan, Mendoza, Argentina.

Index-List of the Coloured Plates of Birds in 'The Ibis,' 1859 to 1917. By Dr. E. Hopkinson.

Notes on the Nidification of Some Indian Falconidae. The Genera *Ictinatus* and *Microhierax*. By E. C. Stuart Baker.

Erythrism in Birds' Eggs. By E. C. Stuart Baker.

On Birds Recently Collected in Siam. Part I. Phasianidae—Eurylamidae. By C. Boden Kloss.—Sixteen new species and subspecies are described.

The Platycercine Parrots of Australia: A Study in Colour-change. By Gregory M. Mathews.

Rejection by Birds of Eggs unlike their own: with Remarks on some of the Cuckoo Problems. By C. F. M. Swynnerton.

**Bulletin of the British Ornithologists' Club.** No. CCXXVIII. Mr. E. C. Stuart Baker describes five new Bulbuls.

Mr. Charles Chubb describes *Scytalopus simonsi* (p. 17), Choquecamate, Bolivia; *Leptoptila intermedia* (p. 17), Central south Peru; *Columba anolaimæ* (p. 17), Anolaima, Colombia; and *Gymnopolia ceciliæ gymnops* (Gray ms.) (p. 18), Challapata, Bolivia. *Parus flavipectus carruthersi* (p. 19); Samarkand, and *Herpornis xantholeuca interposita* (p. 20), Temangoh, Upper Perak, are described by Dr. Hartert.

Mr. P. F. Bunyard discusses the effect of the unusually severe winter of 1916-1917 on the birds.

**Bulletin of the British Ornithologists' Club.** CCXXIX. December 29, 1917.

Lord Rothschild describes *Turtur afer sclateri* (p. 26), Entebbe, Uganda; and Dr. Hartert, *Anthreptes hypogrammica intensior* (p. 27), Sarawak, Borneo and three forms of *Edolisoma*, while Mr. Charles Chubb proposes six new Tinamous, four Doves and Pigeons and two Rails from various parts of South America as well as *Conopophaga aurita occidentalis* (p. 34), from eastern Ecuador.

**Bulletin of the British Ornithologists' Club.** CCXXX. January 28, 1918.

Mr. E. C. Stuart Baker describes *Prinia inornata herberti* (p. 39), Bangkok; and Mr. Charles Chubb *Attagis gayi fitzgeraldi* (p. 40), Horcones Valley, Argentina, and *A. g. simonsi* (p. 41), Lake Titicaca, Peru.

**British Birds.** XI, No. 7. December, 1917.

Occurrence of the Buff-backed Heron in Norfolk. By F. W. Smalley. John Hunt. Part II. By Hugh S. Gladstone.

There is a lengthy discussion on the number of races of the Puffin and their nomenclature.

**British Birds.** XI, No. 8. January, 1918.

Notes and Observations on the Moor-Hen. By Frances Pitt.

The Moults and Sequence of Plumages of the British Waders. By Annie C. Jackson. Part IV.—Lapwing, Turnstone, Upland Plover, Ruff and Sanderling.

**British Birds.** XI, No. 9. February, 1918.

On the Breeding Habits of the Hobby. By M. Ashley.

Notes on the Relation between Moults and Migration as observed in some Waders. By Annie C. Jackson.—Unfortunately the Sanderling was not one of the species selected for study by Miss Jackson. In our experience it moults more freely in migration than any of the others but probably it would not alter the general conclusions reached.

C. J. Alexander. Obituary.

**Avicultural Magazine.** IX, No. 2. December, 1917.

Several Papers on Old World Vultures, wild and in captivity.

Variation in Colour of Wild Geese. By M. Paul.

- Avicultural Magazine.** IX, No. 3. January, 1918.  
Photograph of a running Apteryx.  
Popular Accounts of Bird-life in Australia.  
**The Emu.** XVII, Part 3. January, 1918.  
Fleurieu Peninsula Rosella. By Edwin Ashby.— With a colored plate.  
An Introduction to the Study of the Penguins on the Nobbies, Phillip Island, Western Port, Victoria. By Dr. Brooke Nichols.— With remarks on the validity of *Eudyptula undina*.  
Ornithologists in North Queensland. By Capt. W. Macgillivray.  
Part II.  
Notes upon Eggs of the Wedge-tailed Eagle (*Uroætus audax*). By H. L. White.  
Two Singing Species of Gerygone. By A. H. Chisholm.  
Bird Notes from New South Wales. By Dr. E. A. D'Ombrian.  
**The South Australian Ornithologist.** III, Part 4. October, 1917.  
Birds on the River Murray. By A. M. Morgan.  
**The South Australian Ornithologist.** III, Part 5. January, 1918.  
Birds of Port Broughton. By A. M. Morgan.  
G. M. Mathews' article on Birds of the North and North-west of Australia and the Sketch of the Life of Samuel White, run through both numbers.  
**Revue Française d'Ornithologie.** No. 103. November, 1917. [In French.]  
The Rearing of the Ostrich in Madagascar. By C. Riviere.— Completed.  
Anomalies and Individual Variation in Birds. By E. Anfrue.— Concluded.  
**Revue Française d'Ornithologique.** IX, No. 104. December, 1917.  
The Supposed Return to the Nest of Migrating Birds and the Instability of their Residence. By Dr. F. Cathelin.  
A Study of the Variation in Plumage in *Halcyon albicillus* and *Chloropsis hardwicki*. By J. Berlioz.

#### Ornithological Articles in Other Journals.<sup>1</sup>

- Beck, Rollo H.** Narrative of a Bird Quest in the Vicinity of Cape Horn. (American Museum Journal, January, 1918.) Concluded in the February number.  
**Job, H. K.** Game Farming for Pleasure and Profit. (*Ibid.*)  
**Allen, Arthur A.** Photography and Ornithology. (American Museum Journal, February, 1918.)

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<sup>1</sup> Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

**Beebe, William.** A Second Imperial Parrot. (N. Y. Zoölogical Society Bulletin, January, 1918.)

**Clarke, W. Eagle.** Wild Life in a West Highland Deer Forest. (Scottish Naturalist, December, 1917.)

**Criddle, Norman.** The Red-tailed Hawk in Manitoba. (Ottawa Naturalist, October, 1917.)

**Monro, J. A.** Notes on the Winter Birds of the Okanagan Valley. (*Ibid.*, November, 1917.)

**Tinsley, H. G.** The Elusive Blue Quail of Texas. (Forest and Stream, March, 1918.)

**Allen, A. A.** Preserving Black Duck and Canvasback. (Bull. Amer. Game Protective Assoc., October, 1917.)

**Job, H. K.** The Audubon Society Experiment Station. (*Ibid.*)

How a Ruffed Grouse Drums. By F. K. Vreeland. (*Ibid.*, January, 1918.) — A series of excellent photographs.

**Oberholser, H. C.** Description of a New Subspecies of *Perisoreus obscurus*. (Proc. Biol. Soc. Wash., Vol. 30, December 1, 1917.) — *P. o. rathbuni* (p. 185). Lake Crescent, Washington.

**Bangs, O.** Vertebrata from Madagascar. Aves. (Bull. Mus. Comp. Zool., LXI, No. 14, February, 1918.) — An annotated list of 110 species. *Oena capensis aliena* (p. 491); *Phalacrocorax africanus pictilis* (p. 500); *Anhinga vulsini* (p. 501) and *Agapornis madagascariensis ablectanea* (p. 503) are described as new.

**Hartert, Ernst.** On the Crested Larks of the Nile Valley. (Novitat. Zool., Vol. XXIV, No. III, December, 1917.)

**Hartert, Ernst.** Notes on Pheasants. (*Ibid.*) — Complete list of genus *Phasianus*.

**Hartert, Ernst.** A Few Notes on the Birds of Yemen. (*Ibid.*) — *Anthus sordidus arabicus* (p. 457); *A. s. sokotrae* (p. 457); *Cisticola cisticola arabica* (p. 458); *Parisoma blanfordi distincta* (p. 459); *Monticola rufocinerea sclateri* (p. 459).

**Hartert, Ernst.** The Subspecies of *Cyanopica cyanus*. (*Ibid.*) *C. c. interposita* (p. 493) Tai-pai-shan, Tsin-ling Mts.

**Hartert, Ernst, and Goodson, Arthur.** Further Notes on South American Birds. (*Ibid.*) *Cymbilanius lineatus intermedius* (p. 495) Rio Madeira, Brazil; *Thamnophilus punctatus interpositus* (p. 496) "Bogota"; *Th. doliaetus tobagensis* (p. 497) Tobago; *Th. bernardi baroni* (p. 498) Yonan River, Peru; *Synallaxis unirufa meridana* (p. 498) Andes of Merida, Ven.; *Sclateria naevia trinitatis* (p. 499) Trinidad; and *Pseudocolaptes boissonneantii merida* (p. 499) Vale of Merida, are described as new.

**Pettitt, E. E.** Some Further Notes on the Cuckoo. (Wild Life, IX. No. 11-12, November and December, 1917.) — Contains numerous half-tones and popular articles on birds.

**Stephens, T. C.** Birds of the Past Winter, 1916-1917, in Northwestern Iowa. (Proc. Iowa Acad. Sci., XXIV.)

**Gabrielson, Ira N.** A List of the Birds Observed in Clay and O'Brien Counties, Iowa. (*Ibid.*) — 136 species.



**Bennett, W.** Notes on Bell's Vireo. (*Ibid.*) — Observations on 13 nests and other data, illustrated by half-tones, two of which, by the way, are printed upside down.

**Rintoul, L. J. and Baxter, E. V.** Autumn Displays in our British Birds. (Scottish Nat., November, 1917.)

**Decher, H. K.** The Evening Grosbeak in Greater New York. (Proc. Staten Isl. Asso. Arts and Sci., VI.)

**Davis, W. T.** Interesting Work of the Woodpeckers. (*Ibid.*)

**van Someren, V. G. L.** A Rare Forest Francolin (*Francolinus lathamii schubotzi*). (Jour. E. Afr. and Uganda Nat. Hist. Soc., VI, March, 1917.)

**Loveridge, A.** A Natural History Expedition through the Kedong Valley, B. E. A. (*Ibid.*) — Interesting narrative full of bird notes.

**Baker, E. C. Stuart.** The Game Birds of India, Burma and Ceylon. (Jour. Bombay Nat. Hist. Soc., XXV, No. 2, September, 1917.) — Genus *Gennæus*; very full discussion.

**Donald, C. H.** The Raptorial Birds of the Punjab. (*Ibid.*)

**Delacour, Jean.** Resistance of Exotic Birds to Cold. (Bull. Soc. Nat. Acclim. France, 64 ann., August, 1917.) [In French.]

**Larcher, O.** Contribution to the History of Female Birds which have developed the External Characters of the Male. (*Ibid.*) [In French.]

**Delacour, Jean.** On *Schizorhis cristata*. (*Ibid.*, September, 1917.)

**Willett, George.** Notes on Some Mollusc-eating Birds. (Lorquinea, II, pp. 33-36.)

**Oberholser, H. C.** New Light on the Status of *Empidonax traillii* (Audubon). (The Ohio Jour. of Science, January, 1918.) The type proves to be the eastern race, so that *E. t. alnorum* becomes a synonym of *E. t. traillii* and the "Traill's Flycatcher" of the west being left without a name is called *E. t. brewsteri* (p. 93), type locality, Cloverdale, Nevada.

**Morgan, T. H.** Inheritance of Number of Feathers of the Fantail Pigeon. (Amer. Nat., January, 1918.) — Figures the curious "split feathers."

**Bretscher, K.** Bird Migration in Central Switzerland in Relation to Meteorological Conditions. (Nov. Mem. Soc. Helvet. Sci. Nat., Vol. 51, Mem. 2.) [In French.] — A Review of this interesting paper will be found in 'Nature,' for September 20, 1917. While Dr. Bretscher does not consider temperature the inciting cause of migration, he claims for it considerable influence on the progress of the flight.

**Publications Received.**—**Anderson, R. M.** Report of the Southern Division in Canadian Arctic Expedition, [with two other reports] pp. 1-56 (reprinted and repaged from the Report of the Naval Service for the fiscal year ending March 31, 1917).

**Arthur, S. C.** The Birds of Louisiana. Bulletin 5, Department of Conservation, pp. 1-80. January 19, 1918.

**Batchelder, C. F.** Two Undescribed Newfoundland Birds. Proc. New England Zool. Club, VI, pp. 81-82. February 6, 1918.



**Chapman, F. M.** — Audubon Pocket Bird Collection Cases Nos. I-IV. Price 10 cents each, Nat. Asso. Audubon Societies.

**Chapman, F. M.** The Distribution of Bird-Life in Colombia; a Contribution to a Biological Survey of South America. Bull. Amer. Mus. Nat. Hist., Vol. XXXVI, 1917, pp. i-x + 1-729.

**Geo, N. Gist and Moffett, Lacy I.** A Key to the Birds of the Lower Yangtze Valley. Shanghai, 1917, pp. 1-221 + index.

**Hartert, Ernst.** (1) On Some Rallidae. (Novitates Zoologicae, Vol. XXIV, pp. 265-274, May, 1917.) (2) Notes on Game-Birds. (*Ibid.*, pp. 275-292, May, 1917.) (3) Some Further Notes on *Anthreptes malacensis*. (*Ibid.*, p. 323, May, 1917.) (4) Notes and Descriptions of South American Birds. (*Ibid.*, pp. 410-419, August, 1917.) (5) On the Forms of *Coturnix coturnix*. (*Ibid.*, pp. 420-425, August, 1917.) (6) *Scolopax rusticola mira*. (*Ibid.*, p. 437, August, 1917.)

**Hollister, N.** Report of the Superintendent of the National Zoological Park for the Fiscal year ending June 30, 1917. (Ann. Rept. Smithsonian. Inst. for 1917, pp. 71-87.)

**Kalmbach, E. R.** The Crow and its Relation to Man. Bull. 621, U. S. Dept. of Agric., February 16, 1918, pp. 1-92, price 15 cents.

**Mathews, Gregory M.** The Birds of Australia. Vol. VI, pp. 445-516 + i-xix. Part VI, December 11, 1917.

**McAtee, W. L.** How to Attract Birds in the East Central States. Farmers' Bull. 912, U. S. Dept. Agric., February, 1918, pp. 1-15.

**Murphy, Robert C.** (1) A New Albatross from the West Coast of South America. (Bull. Amer. Mus. Nat. Hist., Vol. XXXVII, pp. 861-864, December 10, 1917.) (2) Natural History Observations from the Mexican Portion of the Colorado Desert. (Abstr. Proc. Linn. Soc. N. Y., No. 24-25, 1917, pp. 43-101.)

**Nelson, E. W.** Report of Chief of Bureau of Biological Survey, pp. 1-16 (repaged from the Ann. Reports of the Dept. of Agriculture.)

**Shufeldt, R. W.** (1) Fossil Birds Found at Vero, Florida, with Descriptions of New Species. (Ninth Annual Report Florida State Geol. Survey, pp. 35-42, 1917.) (2) Anomalies of the Animal World — Parts VI and VII. (Scient. Amer. Supplement, Nos. 2196, February 2, 1918, and 2192, January 5, 1918.) (3) Western Quails Being Exterminated. (Amer. Forestry, Vol. 23, No. 285, September, 1917, pp. 565-566.) (4) Two Fine Collections of Mounted Birds (Nat. Humane Review, Vol. VI, No. 2, February, 1918.)

**Swarth, H. S.** The Pacific Coast Jays of the Genus *Aphelocoma*, Univ. of Calif. Publ. in Zool., Vol. 17, No. 13, pp. 405-422, February 23, 1918.

**Wetmore, Alexander.** (1) The Relationships of the Fossil Bird, *Palaeochenoides mioceanus*. (Journal of Geology, XXV, No. 6, September-October, 1917, pp. 555-557.) (2) A New Honey-eater from the Marianne Islands. (Proc. Biol. Soc. Washington, pp. 117-118, May 23, 1917.) (3) On the Fauna of Great Salt Lake. (American Naturalist, Vol. LI, December, 1917, pp. 753-755.)

**Abstract** Proceedings Linnæan Society New York. Nos. 28-29, 1915-1917 (December 11, 1917), pp. 1-114.

**American** Museum Journal, XVII, No. 8 and XVIII, Nos. 1 and 2, December, 1917-February, 1918.

**Audubon** Bulletin, Winter 1917-1918, Illinois Audubon Society, pp. 1-48.

**Avicultural** Magazine, (3), IX, Nos. 2-3, and 4, December, 1917-February, 1918.

**Bird** Notes and News, VII, No. 8, Winter, 1917.

**Bird-Lore**, XX, No. 1, January-February, 1918.

**British** Birds, XI, No. 7, 8, and 9, December, 1917-February, 1918.

**Bulletin** American Game Protective Association, Vol. 7, No. 1, January, 1918.

**Bulletin** British Ornithologists' Club, Nos. CCXXVIII, CCXXIX and CCXXX, December 4, 1917-January 28, 1918.

**Bulletin** Charleston Museum, XIII, Nos. 7 and 8, XIV, Nos. 1 and 2, November, 1917-February, 1918.

**California** Fish and Game, IV, No. 1, January, 1918.

**Condor**, The, XX, No. 1, January-February, 1918.

**Cornell** University Official Publication, IX, No. 4, January 15, 1918.

**Emu**, The, XVII, Part 3, January, 1918.

**Fins** Feathers and Fur, No. 12, December, 1917.

**Forest** and Stream, LXXXVIII, Nos. 1, 2 and 3, January-March, 1917.

**Ibis**, The, (10) VI, No. 1, January, 1918.

**New Jersey** Audubon Society, Seventh Annual Report, October 2, 1917.

**Odologist**, The, XXXIV, No. 12, XXXV, Nos. 1, 2, and 3, December, 1917-March, 1918.

**Ottawa** Naturalist The, XXXI, Nos. 7, 8 and 9, October-December, 1917.

**Philippine** Journal of Science, The, XII, Sect. D., Nos. 4 and 5, July and September, 1917.

**Records** of the Australian Museum, XI, No. 12, November, 1917.

**Revue** Française d'Ornithologie, Nos. 103, 104, and 105, November-January, 1918.

**Science**, N. S., Nos. 1198-1210.

**Scottish** Naturalist, The, No. 72, December, 1917.

**South** Australian Ornithologist, The, III, Parts 4 and 5, October, 1917, and January, 1918.

**Wilson** Bulletin, The, XXIX, No. 4, December, 1917.

**Zoological** Society Bulletin, XXI, No. 1, January, 1918.

## CORRESPONDENCE.

EDITOR OF 'THE AUK':

Anent "sight" records, the following has come to my attention and seems to be worthy of presentation. It is not a joke, but we have here the untrained observer who is sure of what he has seen and records the details minutely. I quote the letter verbatim, written under date of December 11, 1917:

"On the 9th of December between 1:30 and 2 o'clock, under bright sunny conditions and with temperature around 10 or 15 degrees above zero, I was taking photographs in the village of ——— Rockland County. Mr. ———, artist, of ——— and Mr. ———, farmer, of ——— were with me at the time and support my statement from their own independent observations.

"We saw several times, two male scarlet tanagers. They did not seem to be disturbed by the cold but flew around from tree to tree apparently seeking food. There could be absolutely no mistake as it was in an open country with only scattered trees and a fresh fall of snow on the ground that brought their bright plumage out in strong contrast. . . . I wish to emphasize the fact that there could be no doubt as to these birds as I am familiar with the birds, seeing them almost yearly in the woods around ——— in the spring of the year and I saw them several times that morning for a period of twenty minutes to half an hour and at a distance varying from fifty to a hundred feet. Mr. ——— and Mr. ——— will be very glad to submit statements if you care to have them. You can do what you care to with this statement."

Comment is almost superfluous. The writer did not know that the Scarlet Tanager in autumn changes his red coat for a yellow-green one so that the birds he saw could not have been of this species. Most of us can guess what he really did see, but that is just what is the matter with so many "sight" records. Truly "a little knowledge is a dangerous thing."

Yours truly,

JONATHAN DWIGHT.

New York, Feb. 1, 1918.

[The undersigned has already presented the "sight" record problem to the readers of 'The Auk' (1917, p. 373), and to the members of the A. O. U. at the last stated meeting. He hoped for some suggestions — some approval or criticism of the tentative solution he offered, but no one seems inclined to discuss the question. Even Dr. Dwight in presenting this interesting and instructive example, fails to offer any advice. It should not be difficult for any editor to reject this record but there are others just as erroneous where the fault is by no means so easily detected. — W. S.]

## NOTES AND NEWS.

WALTER REAVES ZAPPEY, an Associate of the American Ornithologists' Union, was born in Roxbury, Massachusetts, May 6, 1878, the son of Christian and Augusta Reaves Zappey. He early showed a keen interest in animal life, particularly in birds, and as a boy spent much time in the woods, hunting, trapping, and observing. When about nine years old he moved with his parents to Roslindale, Massachusetts, then a rather thinly settled part of the community, where he had easy access to the woods and fields, and brought home various live creatures as pets. During this time he attended the public schools of Boston, and eventually took up work in taxidermy with the Frank Blake Webster Co., of Hyde Park. In February, 1902, he was sent by Mr. Webster to the Isle of Pines, Cuba, to make zoölogical collections for the Hon. Walter Rothschild of London. This was the first of his collecting trips, from which he returned in the early summer of the same year. In the following spring he made a second expedition to the Isle of Pines for Mr. Outram Bangs of Boston, and was successful in securing an exceptionally fine and well prepared collection of birds, on which a report was published by Mr. Bangs and himself (*American Naturalist*, 1905, vol. 39, p. 179-215). It was on this trip that he also secured the specimens of the Isle of Pines representative of the Cuban *Capromys pilorides*, one of which was made the type of the subspecies *C. relictus*.

In December 1906, his services were obtained as a collector in the interests of the Museum of Comparative Zoölogy, to accompany Mr. E. H. Wilson, the botanist, on an expedition into the interior of China. He reached Shanghai in February, 1907, and spent most of his first year in the region of Ichang, whence he sent home a fine collection of vertebrates. The second year he travelled with Mr. Wilson in their house-boat up the Yang-tze to Kiating, thence overland, through the Province of Szechuan to the Tibetan border. He collected in many localities where no white man had been seen before, and made a particularly valuable collection of birds, mammals, and reptiles on the isolated Wa Shan range. A general report on his Chinese collections, with accounts of sundry new species appeared in the *Memoirs of the Museum of Comparative Zoölogy*, Vol. 40, 1912. In returning home from China, he came via the Indian Ocean and Red Sea, to England, arriving in Boston in May, 1909, thus completing a journey around the globe.

In October of the same year, he again set forth, this time with Mr. Childs Frick of Pittsburgh, to British East Africa, to be gone eight months. Although the main object of the expedition was large game, he made an excellent collection of small birds and mammals, which were given by Mr. Frick to the Museum of Comparative Zoölogy, while most of the larger specimens were presented to the Carnegie Museum at Pittsburgh.



After his return from Africa, he began work as preparator at the Museum of Comparative Zoölogy, and showed much skill in mounting and renovating skins. A valvular trouble of the heart had already made its appearance but did not seem alarming.

He was married on October 26, 1910, to Miss Nellie L. Krook, of Reading, Mass., and resided at Arlington and Cambridge up to the time of his death from valvular heart disease, February 20, 1914. There were no children.

As an energetic and intelligent field collector, skilful preparator, and cheerful companion, Walter Zappey will long be remembered by those who knew him.—GLOVER M. ALLEN.

ROWLAND GIBSON HAZARD of Peace Dale, R. I., an Associate of the American Ornithologists' Union since 1885, died of heart disease at Santa Barbara, Cal., January 23, 1918. Mr. Hazard was born in Philadelphia, Pa., January 22, 1855, the son of Rowland and Margaret Anna (Rood) Hazard of Rhode Island. He was graduated from Brown University, receiving the degree of A. B. and A. M. from his Alma Mater. At the time of his death Mr. Hazard was President of the Peace Dale Manufacturing Company, and a Director of several other large corporations—both manufacturing and financial. He possessed a fine ornithological library and although engrossed in business never lost his interest in birds. He contributed many notes to 'The Auk' on Rhode Island birds from 1884 to 1908 and published an interesting account of the 'Breeding habits of the King Penguin (*Aptenodytes longirostris*)' in the October, 1894, number, pp. 280-282. Mr. Hazard was a genial whole-souled gentleman and a delightful man to meet. He was a Fellow of Brown University and a member of the Authors' Club of London.—J. H. S.

GEORGE BATTEN, Associate member of the Union since 1911, and one of the pioneer advertising men of New York, died February 16, 1918, at his home in Montclair, New Jersey, after an illness of several months. He was the son of Thomas Gaskill and Emeline Lane Batten, and was born on a farm in Gloucester, New Jersey, June 19, 1854. He is survived by his wife, who was Miss Lillie I. Shivers, and five children, Rollins M., Joseph L., George Jr., Mrs. A. Y. McNeill, and Miss Emeline Batten.

Although he has written comparatively little on ornithology, he always has taken a keen interest in the science and in out of door sports with rod and gun. As president of the New Jersey Audubon Society during the years 1911-1915 he was active in developing it to the high standard of efficiency which it now enjoys.

The conservation of wild life appealed to him, and as president of the Association of New Jersey Sportsmen, he was active in bringing about legislation for its protection and increase.

Mr. Batten was always actively interested in farming and live stock breeding, and was owner of a herd of pure bred Jersey cattle.



At the age of twenty years he began his business career and in 1891 laid the foundation of a concern which later was destined to develop into one of the leading advertising establishments — The George Batten Company — with branches in New York, Boston, and Chicago. As a member of the 1st Regiment National Guards of Pennsylvania, he served in the Pittsburgh riots.

He was director of the American Jersey Cattle Club, life member of the New York Agricultural Society, president of the Jersey Cattle Association of New Jersey, member of American Game Protective Association, president of Montclair Chapter of the Sons of the American Revolution, member Colonial Society of Philadelphia, member Montclair Club, Montclair Art Association, Outlook Club, Montclair Golf Club, Advertising Club of New York and the Sphinx Club. A very good portrait of him may be found in *Bird-Lore* for 1914, page 522.

He was a man of high ideals, sound judgment and pleasing personality, a combination of virtues which won for him many friends, who recognize in his death a serious loss.— A. K. F.

DR. JAMES CLARKE WHITE, an Associate of the American Ornithologists' Union since 1913 was not a professional naturalist but throughout a busy life as a physician never lost altogether the keen interest in natural history of his early days. Born in Belfast, Maine, July 7, 1833, the fifth of seven children of James Patterson and Mary Ann Clarke White, sturdy New Englanders, he spent a boyhood in the healthy surroundings of a quiet Maine town, picking up an education in the local schools and finally entering Harvard College in 1849. He spent many leisure hours in the college library, where he attracted the attention of the librarian Thaddeus William Harris, on account of the frequency with which he asked for works on natural history. He was keenly interested in the Harvard Natural History Society, then a flourishing undergraduate association, with a small museum, in which a collection of stuffed birds was one of the chief exhibits. Of this collection he was "Curator" and writes that he spent much time in mounting on perches the specimens he had shot during his summer vacations. After his graduation at the age of twenty, he determined to study medicine and enrolled at the Tremont Medical School of Boston, obtaining his medical degree in 1856. He was the first American medical student to study at Vienna, where he took up the investigation of diseases of the skin and laid the foundation for his later eminence as a specialist in this branch of medicine. In 1857, he began a general medical practice in Boston, and in 1871 was made Professor of Dermatology at the Harvard Medical School, a position which he filled until his resignation in 1902. He married Martha Anna Ellis of Boston, in 1862, and was survived by two of his three sons.

Although he took no active interest in ornithology in his later years, he was an honored member of the Boston Society of Natural History, and

from 1858 to 1868 was Curator of Comparative Anatomy in its museum, where he arranged the large Lafresnaye collection of birds.

Dr. White died January 5, 1916, at Boston, an honored and eminent member of his community, and an example of the class of physician-naturalists, who in a former generation were largely responsible for the progress of natural science.—GLOVER M. ALLEN.

ERIC BROOKE DUNLOP, an Associate of the American Ornithologists' Union, was killed in action in France, May 19, 1917. He was thirty years of age.

He was the son of Arthur B. Dunlop of The Hove, Frontbeck, Windermere, England, and was educated at Rugby. From early boyhood he had devoted himself to the study of birds and prepared an appendix to Macpherson's 'Fauna of Lakeland.'

In 1913 he came to Canada and was located at Winnipeg where he continued his studies and made contributions to 'The Auk' and 'British Birds.' He enlisted in 1915 in the 78th Canadian Grenadiers but in England transferred to the Border Regiment. He reached France barely a month before his death.—W. S.

HENRY JUSTICE, an associate of the American Ornithologists' Union, died at Philadelphia on March 1, 1918, in his seventy-fourth year. Mr. Justice came of old Colonial stock and his father, Wm. W. Justice, an intimate friend of John G. Whittier, was a conspicuous figure in Pennsylvania antislavery agitation.

While Mr. Justice was for many years engaged with his brother in the wool business, he was deeply interested in the study and preservation of the native birds, and was an active member of the Pennsylvania Audubon Society.—W. S.

FOREIGN MEMBERS OF THE A. O. U.—The foreign members of the American Ornithologists' Union comprise two groups, Honorary Fellows, elected on account of their eminence in ornithology, and limited to 25, and Corresponding Fellows limited to 100. These limitations were fixed at the founding of the Union and have never been changed. The two classes (known prior to 1902 as Honorary and Corresponding Members) correspond to the Honorary and Foreign Members of the British Ornithologists' Union but are considerably broader since the number of Honorary Members in the latter is restricted to 10 and the number of Foreign Members to 20. In addition to these, Colonial Members of the B. O. U., limited to 10, are placed in a special class.

At the first meeting of the A. O. U., 21 Honorary Members were elected and four months later, on January 17, 1884, the first loss occurred through the death of the veteran ornithologist Hermann Schlegel. At the second meeting the list was filled and remained at the limit for more than five years when a vacancy occurred in January, 1890, through the death of Taczanowski. Since then the list has never been full and in 1911 the number

declined to 11. Up to the present time 45 Honorary Fellows have been elected of whom 16 are still living. Of these Dr. Otto Finsch, Mr. F. D. Godman and Count Salvadori were elected at the first meeting in 1883. The others have been transferred at various times from the Corresponding list since it is now the custom to elect a foreign member first as a Corresponding Fellow. The Honorary list of the A. O. U. includes some of the most eminent ornithologists of modern times. Among those now deceased will be found the names of Berlepsch, Cabanis, Huxley, Milne-Edwards, Alfred Newton, W. K. Parker, Schlegel, P. L. Selater, Sharpe, and Wallace, while among those still living are several names equally well known. The only American ever elected to the Honorary class was the late George N. Lawrence.

Unlike the Honorary list the class of Corresponding Fellows has never been filled although the total number of individuals elected has been 127. At the first meeting 20 were elected and at the second meeting the number was increased to 77 but apparently several failed to qualify as the secretary reported only 65 at the opening of the third meeting, although no deaths had then occurred. Seven years later, in 1892, the list reached its maximum of 74, in 1895 it fell below 70, and since 1911 has been less than 60 through losses both by death and by transfer.

Of the total 127 thus far elected 17 have been promoted to the Honorary list and 2 to the list of Active Members. Seventy-one are still living; 57 are now Corresponding Fellows, 13 are on the Honorary list and one is a Retired Fellow. One third of the present number have been on the list more than 30 years,— eight elected in 1883, 10 in 1884 and 3 in 1886. At various times 11 Americans have been elected as Corresponding Fellows. Of these, Dr. Abbott, Carriker, Chamberlain, ex-Governor Dole and Prof. Worcester are still on the list, Dr. Stejneger is a Retired Fellow, and the other 5, Bryant, Cooper, Prentiss, Scott (an Active Member 1886-1895), and Woodhouse are now deceased.

Since its organization 143 foreign ornithologists have been associated with the Union either as Honorary or Corresponding Fellows. In 1885, when the Honorary list was filled and there were more Corresponding Members than Associates, the foreign members formed nearly 44 per cent of the total number. Now the membership of the Union has increased nearly five fold and the foreign members constitute only about 7 per cent of the total number.— T. S. P.

**CALLED TO THE COLORS.**—Since the first list of A. O. U. members in military service appeared in the January number of 'The Auk,' a number of additions as well as changes in rank and station have come to our notice. It seems desirable therefore to reprint the preliminary list with the necessary corrections and additions.

ADAMS, DR. Z. B., Brookline, Mass., Amer. Exped. Forces. In France.

ANTHONY, H. E., New York City. 1st Lieut., 309th Field Artillery, Camp Dix, Wrightstown, N. J.

- BABCOCK, DR. H. L., Dedham, Mass. Lieut., Med. Reserve Corps.
- BAKER, JOHN HOPKINSON, Dayton, O. Lieut., School for Aerial Observers, Fort Sill, Okla.
- BEEBE, C. WILLIAM, New York City. Capt., American Flying Corps.
- BOYLE, HOWARTH STANLEY, New York City. In France.
- BROOKS, ALLAN, Okanagan Landing, B. C. Major, Second Army School of Scouting etc., British Expeditionary Forces in France.
- BROOKS, WINTHROP SPRAGUE, Boston, Mass. Ensign in the Navy.
- BURLEIGH, THOMAS D., Pittsburg, Pa. Y. M. C. A. Army & Navy Association. In France.
- CHAPIN, JAMES PAUL, New York City. 1st Lieut., 309th Infantry, Camp Dix, Wrightstown, N. J.
- DERBY, DR. RICHARD, New York, N. Y. Major, Amer. Exped. Forces. In France.
- EASTMAN, F. B. Major, 344th Infantry, Camp Grant, Rockford, Ill.
- DUNLOP, ERIC B., Winnipeg, Man. Canadian Border Regiment. Killed in action, March 19, 1917.
- FAY, SAMUEL PRESCOTT, Boston, Mass. 1st Lieut., Artillery, Camp Devens, Ayer, Mass.
- GOLDMAN, EDWARD ALFONSO, Washington, D. C. Major, Sanitary Corps, National Army. In France.
- GRISCOM, LUDLOW, New York City. 2d Lieut., Infantry, Leon Springs, Texas.
- HAGAR, JOSEPH ARCHIBALD, Newtonville, Mass. 2d Lieut., Infantry, Camp Devens, Ayer, Mass.
- HARPER, FRANCIS, Washington, D. C. 1st Company Officers Training School, Camp Meade, Md.
- HOLT, ERNEST GOLSAN, Washington, D. C. 1st Company Officers Training School, Camp Meade, Md.
- KITTREDGE, JOSEPH, JR., Missoula, Mont. 1st Lieut., 10th Engineers (Forest). In France.
- LAING, HAMILTON MACK, Portland, Ore. No. 170004 R. F. C., Jesse Ketcham School, Toronto, Ontario.
- LEWIS, HARRISON F., Yarmouth, N. S. Sergeant Major, No. 6 Special Service Co., Canadian Expeditionary Force, Halifax, N. S.
- MABBOTT, DOUGLAS C., Washington, D. C. Marine Corps, Paris Island near Charleston, S. C.
- MARX, EDW. J. F. Capt. Battery B, 16th Field Artillery, Camp Greene, N. C.
- MATTERN, EDWIN S. Camp Meade, Md.
- MCCOOK, PHILIP JAMES, New York, N. Y. Major, Governor's Id., N. Y.
- MEYER, MISS HELOISE, Lenox, Mass. Red Cross. In France.
- MEYER, G. RALPH. Captain C. A. C., Ft. Kamehameha, H. I.
- PEPPER, DR. WILLIAM. Major, Medical Reserve Corps, Ft. Oglethorpe, Ga.
- ROBINSON, WIRT. Colonel, U. S. Military Academy, West Point, N. Y.



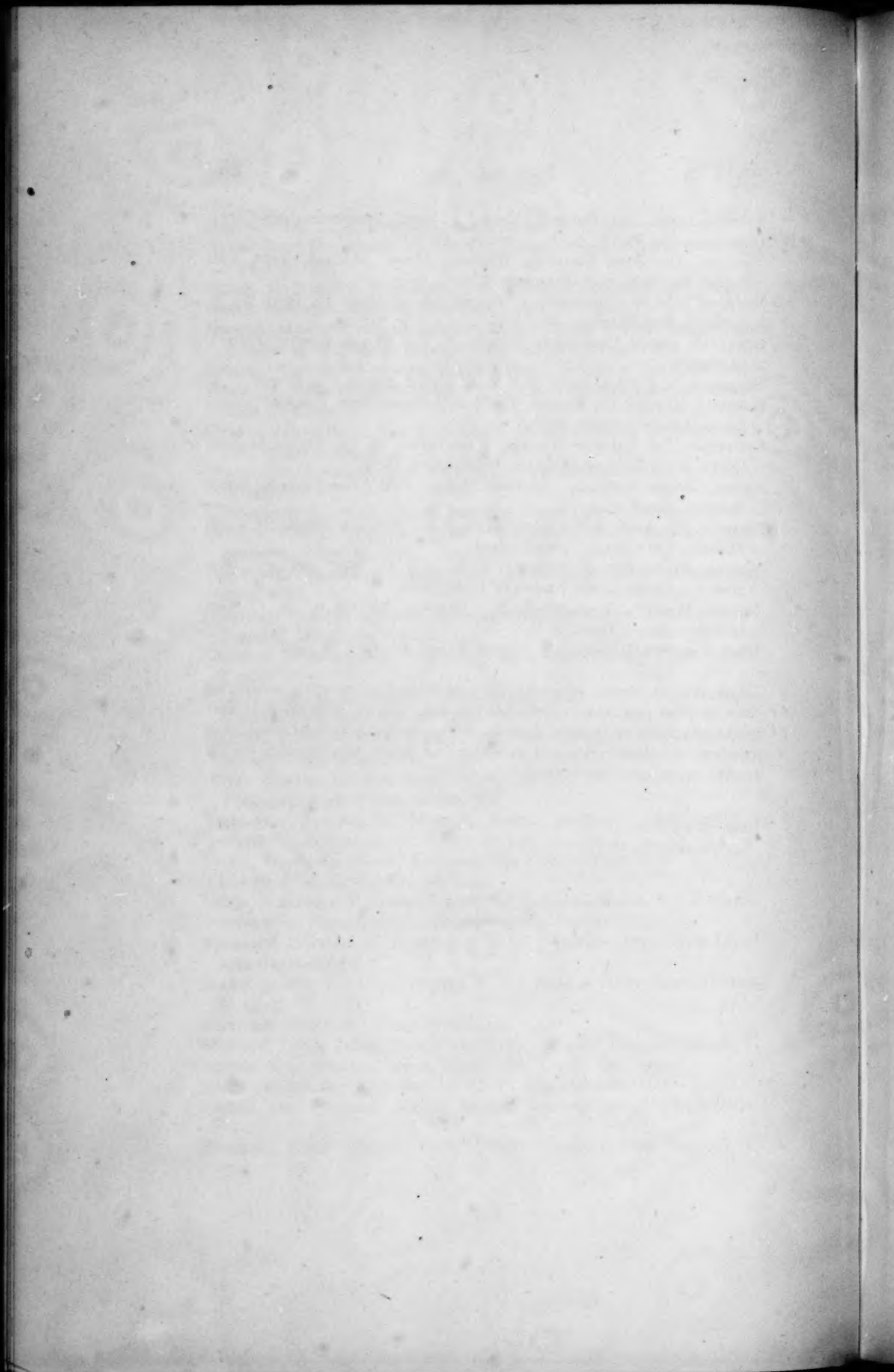
- PETERS, JAMES LEE, Harvard, Mass. 2d Lieut., Quartermaster's Corps, Jacksonville, Fla.
- PHILLIPS, DR. JOHN CHARLES, Wenham, Mass. Medical Corps, Fort Benjamin Harrison, Indianapolis, Ind.
- SANBORN, COLIN CAMPBELL, Evanston, Ill. Battery C, 149th U. S. Artillery, Fort Sheridan, Ill.
- SCHAEFER, OSCAR FREDERICK, Geneva, N. Y. 10th Engineers (Forest). In France.
- SCHAEFER, V. F., Geneva, N. Y. Amer. Exped. Forces. In France.
- SHELTON, ALFRED C., Eugene, Ore. Pathologist Base Hospital, Camp Lewis, American Lake, Wash.
- SHUFELDT, DR. ROBERT WILSON, Washington, D. C. Major, Medical Corps, Army Medical Museum, Washington, D. C.
- SMITH, LESTER WHEADON, Meriden, Conn. First Class Seaman, Naval Reserve. In France.
- STIMSON, DR. ARTHUR M., Washington, D. C. Sanitary Officer, 2d Naval District, War College, Newport, R. I.
- STORER, TRACY IRWIN, Berkeley, Calif. Co. G, 363d Infantry, Base Hospital, Camp Lewis, American Lake, Wash.
- YOUNG, JOHN P., Youngstown, O. Captain, 5th Co., C. A. C. Fort Hancock, Sandy Hook, N. J.
- WOOD, GEORGE B., Phila., Pa. Amer. Exped. Forces. In France.

Relatives or friends who may have additional information concerning these or other members are requested to communicate with the Secretary giving any facts as to rank, branch of the service or present location of members in military service in order that necessary corrections in the list may be made from time to time.

1939 Biltmore St., N. W.  
Washington, D. C.

T. S. Palmer,  
*Secretary.*





# OFFICERS AND COMMITTEES OF THE AMERICAN ORNITHOLOGISTS' UNION. 1918.

|  | Expiration of Term |
|--|--------------------|
| SAGE, JOHN H., <i>President</i> .....            | November, 1918.    |
| HENSHAW, HENRY W. } <i>Vice-Presidents</i> ..... | " 1918.            |
| STONE, WITMER. .... }                            |                    |
| PALMER, T. S., <i>Secretary</i> .....            | " 1918.            |
| DWIGHT, JONATHAN, <i>Treasurer</i> .....         | " 1918.            |

## ADDITIONAL MEMBERS OF THE COUNCIL.

|                            |                  |
|----------------------------|------------------|
| DEANE, RUTHVEN.....        | November, 1918.  |
| DUTCHER, WILLIAM.....      | " 1918.          |
| GRINNELL, JOSEPH.....      | " 1918.          |
| LUCAS, FREDERIC A.....     | " 1918.          |
| OSGOOD, WILFRED H.....     | " 1918.          |
| RICHMOND, CHARLES W.....   | " 1918.          |
| ROBERTS, THOMAS S.....     | " 1918.          |
| ALLEN, J. A.....           | } Ex-Presidents. |
| BATCHELDER, CHARLES F..... |                  |
| BREWSTER, WILLIAM.....     |                  |
| CHAPMAN, FRANK M.....      |                  |
| CORY, CHARLES B.....       |                  |
| FISHER, ALBERT K.....      |                  |
| MERRIAM, C. HART.....      |                  |
| NELSON, EDWARD W.....      |                  |
| RIDGWAY, ROBERT.....       |                  |

## EDITORIAL STAFF OF 'THE AUK.'

|                                    |                 |
|------------------------------------|-----------------|
| STONE, WITMER, <i>Editor</i> ..... | November, 1918. |
|------------------------------------|-----------------|

## COMMITTEES.

### *Committee on Publications.*

|                                   |                   |
|-----------------------------------|-------------------|
| SAGE, JOHN H.                     | STONE, WITMER.    |
| PALMER, T. S., <i>Secretary</i> . | DWIGHT, JONATHAN. |

### *Committee of Arrangements for the Meeting of 1918.*

|                                   |                    |
|-----------------------------------|--------------------|
| SAGE, JOHN H., <i>Chairman</i> .  | DWIGHT, JONATHAN.  |
| PALMER, T. S., <i>Secretary</i> . | LUCAS, FREDERIC A. |
| ROGERS, CHARLES H.                |                    |

# FELLOWS, MEMBERS, AND ASSOCIATES OF THE AMERICAN ORNITHOLOGISTS' UNION.

APRIL, 1918.<sup>1</sup>

## FELLOWS.

|  | Date of<br>Election.    |
|--|-------------------------|
| ALLEN, Dr. J. A., Amer. Mus. Nat. Hist., New York, N. Y.....       | Founder                 |
| ANTHONY, A. W., Ironside, Ore.....                                 | (1885)1895 <sup>2</sup> |
| BANGS, OUTRAM, Museum Comp. Zoölogy, Cambridge, Mass....           | (1884)1901              |
| BARROWS, Prof. W. B., Box 1047, East Lansing, Mich.....            | 1883                    |
| BATCHELDER, CHARLES F., 7 Kirkland St., Cambridge, Mass....        | Founder                 |
| BEEBE, C. WILLIAM, New York Zoöl. Park, New York, N. Y....         | (1897)1912              |
| BENT, ARTHUR CLEVELAND, Taunton, Mass.....                         | (1889)1909              |
| BICKNELL, EUGENE P., Box 1698, New York, N. Y.....                 | Founder                 |
| BISHOP, Dr. LOUIS B., 356 Orange St., New Haven, Conn.....         | (1885)1901              |
| *BREWSTER, WILLIAM, 145 Brattle St., Cambridge, Mass.....          | Founder                 |
| BROWN, NATHAN CLIFFORD, 218 Middle St., Portland, Me.....          | Founder                 |
| CHADBOURNE, Dr. ARTHUR P., The Copley-Plaza, Boston, Mass. (1883)  | 1889                    |
| CHAPMAN, Dr. FRANK M., Amer. Mus. Nat. Hist., New York, N. Y.      | (1885)1888              |
| *CORY, CHARLES B., Field Museum Nat. Hist., Chicago, Ill.....      | Founder                 |
| DEANE, RUTHVEN, 112 W. Adams St., Chicago, Ill.....                | 1883                    |
| DUTCHER, WILLIAM, 949 Park Ave., Plainfield, N. J.....             | (1883)1886              |
| DWIGHT, Dr. JONATHAN, 134 W. 71st St., New York, N. Y.....         | (1883)1886              |
| FISHER, Dr. ALBERT K., Biological Survey, Washington, D. C....     | Founder                 |
| FISHER, Prof. WALTER K., 1525 Waverley St., Palo Alto, Cal. (1899) | 1905                    |
| FLEMING, JAMES H., 267 Rusholme Road, Toronto, Ontario...          | (1893)1916              |
| FORBUSH, EDWARD H., State House, Boston, Mass.....                 | (1887)1912              |
| FUERTES, LOUIS A., Cornell Heights, Ithaca, N. Y.....              | (1891)1912              |
| GRINNELL, Dr. GEORGE BIRD, 238 E. 15th St., New York, N. Y.....    | 1883                    |
| GRINNELL, Dr. JOSEPH, Mus. Vert. Zoöl., Univ. Cal., Berkeley, Cal. | (1894)1901              |
| HENSHAW, HENRY W., The Ontario, Washington, D. C.....              | 1883                    |
| JONES, LYND, Spear Laboratory, Oberlin, Ohio.....                  | (1888)1905              |

<sup>1</sup> Members of the Union, and subscribers to 'The Auk' are requested to promptly notify Dr. JONATHAN DWIGHT, Treasurer, 134 W. 71st St., New York City, of any change of address.

<sup>2</sup> Dates in parentheses indicate dates of joining the Union.

\* Life Fellow.

- LOOMIS, LEVERETT M., Cal. Acad. Sci., San Francisco, Cal. .... (1883)1892  
 LUCAS, Dr. FREDERIC A., Am. Mus. Nat. Hist., New York, N. Y.  
 (1888)1892  
 MAILLIARD, JOSEPH, 1815 Vallejo St., San Francisco, Cal. .... (1895)1914  
 MCATEE, WALDO LEE, Biological Survey, Washington, D. C. ... (1903)1914  
 MCGREGOR, RICHARD C., Bureau of Science, Manila, P. I. .... (1889)1907  
 MERRIAM, Dr. C. HART, 1919 16th St., N. W., Washington, D. C. Founder  
 MILLER, WALDRON DEWITT, 309 E. 7th St., Plainfield, N. J. ... (1896)1914  
 NEHRLING, H., Gotha, Fla. .... 1883  
 NELSON, E. W., Biological Survey, Washington, D. C. .... 1883  
 OBERHOLSER, Dr. HARRY C., Biological Survey, Washington, D. C.  
 (1888)1902  
 OSGOOD, WILFRED H., Field Museum Nat. Hist., Chicago, Ill. (1893)1905  
 PALMER, Dr. T. S., 1939 Biltmore St., N. W., Washington, D.C. (1888)1901  
 PALMER, WILLIAM, U. S. National Museum, Washington, D.C. (1888)1898  
 RICHMOND, Dr. CHARLES W., U. S. National Museum, Washington,  
 D. C. .... (1888)1897  
 RIDGWAY, Prof. ROBERT, U. S. Nat. Mus., Washington, D. C. ... Founder  
 ROBERTS, Dr. THOMAS S., Univ. of Minnesota, Minneapolis, Minn. ... 1883  
 \*SAGE, JOHN H., Portland, Conn. .... 1883  
 SAUNDERS, WILLIAM E., 240 Central Ave., London, Ontario. .... 1883  
 SHUFFELDT, Dr. ROBERT W., 3356 18th St., N. W., Washington, D.C. Founder  
 STONE, Dr. WITMER, Acad. Nat. Sciences, Philadelphia, Pa. ... (1885)1892  
 SWARTH, HARRY S., Mus. Vert. Zoölogy, Univ. of California, Berkeley,  
 Cal. .... (1900)1916  
 TAVERNER, PERCY A., Victoria Memorial Museum, Ottawa, Canada  
 (1902)1917  
 TODD, W. E. CLYDE, Carnegie Museum, Pittsburgh, Pa. .... (1890)1916  
 WIDMANN, OTTO, 5105 Von Versen Ave., St. Louis, Mo. .... 1884

RETIRED FELLOWS.

- LAWRENCE, NEWBOLD T., Lawrence, N. Y. .... (1883)1913  
 STEJNEGER, Dr. LEONHARD, U. S. Nat. Mus., Washington, D.C. (1883)1911

HONORARY FELLOWS.

- BUTURLIN, SERGIUS ALEXANDROVICH, Wessenberg, Esthonia, Russia  
 (1907)1916  
 DUBOIS, Dr. ALPHONSE, Museum Natural History, Brussels. . (1884)1911  
 EVANS, ARTHUR HUMBLE, 9 Harvey Road, Cambridge, England  
 (1899)1917

|  |             |
|--|-------------|
| FINSCH, Prof. Dr. OTTO, Leonhardplatz 5, Braunschweig, Germany...                    | 1883        |
| FÜRBRINGER, Prof. Dr. MAX, University of Heidelberg, Heidelberg, Germany.....        | (1891) 1916 |
| GADOW, Dr. HANS FRIEDRICH, Cambridge, England.....                                   | (1884) 1916 |
| GODMAN, FREDERICK DUCANE, 45 Pont St., London, S. W.....                             | 1883        |
| HARTERT, ERNST, Zoological Museum, Tring, England.....                               | (1891) 1902 |
| HELLMAYR, Dr. CARL E., Neuhauserstrasse 51.II, Munich, Germany.....                  | (1903) 1911 |
| IHERING, Dr. HERMANN VON, Rua Consello, São Paulo, Brazil. (1902)                    | 1911        |
| PYCRAFT, WILLIAM PLANE, British Museum (Nat. Hist.) Cromwell Road, London, S. W..... | (1902) 1911 |
| REICHENOW, Dr. ANTON, Königl. Mus. für Naturkunde, Invalidenstrasse, 43, Berlin..... | (1884) 1891 |
| ROTHSCHILD, Lord LIONEL WALTER, Zoological Museum, Tring, England.....               | (1898) 1913 |
| SALVADORI, Count TOMMASO, Royal Zoöl. Museum, Turin, Italy.....                      | 1883        |
| SCHALOW, Prof. HERMAN, Hohenzollerndamm 50, Berlin-Grünwald, Germany.....            | (1884) 1911 |
| SCLATER, WM. LUTLEY, 10 Sloane Court, Chelsea, London, S. W.....                     | 1917        |

## CORRESPONDING FELLOWS.

|   |                |
|---|----------------|
| ABBOTT, Dr. WILLIAM L., Aldine Hotel, Philadelphia, Pa.....                     | 1916           |
| ALFARO, ANASTASIO, San José, Costa Rica.....                                    | 1888           |
| ALPHÉRAKY, SERGIUS N., Imperial Acad. Sci., Petrograd, Russia.....              | 1913           |
| ARRIGONI DEGLI ODDI, Count ETTORE, Univ. of Padua, Padua, Italy.                | 1900           |
| BANNERMAN, DAVID ARMITAGE, 11 Washington House, Basil St., London, England..... | 1916           |
| BEDDARD, FRANK EVERS, Zoöl. Society of London, London, Eng.....                 | 1917           |
| BIANCHI, Dr. VALENTINE, Imperial Zoöl. Museum, Petrograd, Russia.               | 1916           |
| BONNOTE, JOHN LEWIS, Gade Spring Lodge, Hemel Hempstead, Herts, England.....    | 1911           |
| BUREAU, Dr. LOUIS, École de Médecine, Nantes, France.....                       | 1884           |
| BÜTTIKOFER, Dr. JOHANNES, Zoological Garden, Rotterdam, Holland.                | 1886           |
| CAMPBELL, ARCHIBALD JAMES, Custom House, Melbourne, Australia.                  | 1902           |
| CARRIKER, M. A., Jr., Apartado 51, Santa Marta, Colombia...                     | (1907) 1912    |
| CHAMBERLAIN, MONTAGUE, Cambridge, Mass.....                                     | (Founder) 1901 |
| CHUBB, CHARLES, British Museum (Nat. Hist.) Cromwell Road, London, S. W.....    | 1911           |
| CLARKE, WILLIAM EAGLE, Royal Scottish Museum, Edinburgh.....                    | 1889           |
| DABBENE, Dr. ROBERTO, Museo Nacional, Buenos Aires, Argentina..                 | 1916           |
| DALGLEISH, JOHN J., Brankston Grange, Bogside Station, Alloa, Scotland.....     | 1883           |



|   |      |
|---|------|
| DOLE, SANFORD B., Honolulu, Hawaii .....  | 1883 |
| ECHT, ADOLPH BACHOFEN VON, Nussdorf, near Vienna, Austria .....                                       | 1883 |
| FEILDEN, Col. HENRY WEMYSS, Burwash, England .....  | 1884 |
| FERRARI-PEREZ, Prof. FERNANDO, Tacubaya, D. F., Mexico .....  | 1885 |
| FREKE, PERCY EVANS, Southpoint, Limes Road, Folkstone, England ..                                     | 1883 |
| GODWIN-AUSTEN, Lieut.-Col. HENRY HAVERSHAM, Nore, Hascombe,<br>Godalming, Surrey, England .....       | 1884 |
| GRANDIDIER, ALFRED, 6 Rond-Point des Champs Elysées, Paris .....                                      | 1883 |
| GURNEY, JOHN HENRY, Keswick Hall,* Norwich, England .....   | 1883 |
| HAAGNER, ALWYN KARL, Pretoria, Transvaal .....  | 1916 |
| HALL, ROBERT, Rest Harrow, Hobart, Tasmania .....   | 1916 |
| HARTING, JAMES EDMUND, Edgewood, Weybridge, Surrey, England ..  | 1883 |
| HENNICKE, Dr. CARL R., Gera, Reuss, Germany .....   | 1907 |
| HENSON, HARRY V., Yokohama Japan .....  | 1888 |
| HUDSON, WILLIAM HENRY, Tower House, St. Luke's Road, West-<br>bourne Park, London, W. ....            | 1895 |
| KRÜPER, Dr. THEOBALD J., University Museum, Athens, Greece .....                                      | 1884 |
| LEGGE, Col. WILLIAM V., Cullenswood House, St. Mary's, Tasmania ..                                    | 1891 |
| LE SOUËF, DUDLEY, Zoölogical Gardens, Melbourne, Australia .....                                      | 1911 |
| LÖNNBERG, Dr. EINAR, Zoölogical Museum, Stockholm, Sweden .....                                       | 1916 |
| LOWE, Dr. PERCY R., The Hatch, Windsor, England .....   | 1916 |
| MACFARLANE, RODERICK, Winnipeg, Manitoba .....  | 1886 |
| MADARÁSZ, Dr. JULIUS VON, National Museum, Budapest, Hungary ..                                       | 1884 |
| MATHEWS, GREGORY M., Langley Mount, Watford, Herts, England ..  | 1911 |
| MÉNÉGAUX, Dr. AUGUSTE, Paris, France .....  | 1916 |
| MENZBIER, Prof. Dr. MICHAEL, Imperial Society of Naturalists,<br>Moscow, Russia .....                 | 1884 |
| MILLAIS, JOHN GUILLE, Compton's Brow, Horsham, England .....  | 1911 |
| NAMIYE, M., Tokio, Japan .....  | 1886 |
| NICHOLSON, FRANCIS, The Knoll, Windermere, Westmoreland, Eng-<br>land .....                           | 1884 |
| OGLIVIE-GRANT, WILLIAM ROBERT, British Museum (Nat. Hist.),<br>Cromwell Road, London, S. W. ....      | 1899 |
| PALMÉN, Dr. J. T., Helsingfors, Finland .....   | 1883 |
| RINGER, FREDERIC, Nagasaki, Japan .....   | 1888 |
| SNETHLAGE, Dr. EMILIA, Museu Goeldi, Pará, Brazil .....   | 1915 |
| SUSCHKIN, Dr. PETER, University, Kharkov, Russia .....  | 1903 |
| THEEL, Dr. JOHAN HJALMAR, University of Upsala, Upsala, Sweden ..                                     | 1884 |
| TSCHUSI ZU SCHMIDHOFFEN, VICTOR, RITTER VON, Villa Tännenhof,<br>bei Hallein, Salzburg, Austria ..... | 1884 |
| VAN OORT, EDWARD DANIEL, Museum Nat. Hist., Leyden, Holland ..  | 1913 |
| WATERHOUSE, F. H., 3 Hanover Square, London, W. ....  | 1889 |
| WINGE, Dr. HERLUF, Univ. Zoöl. Museum, Copenhagen, Denmark ..   | 1903 |
| WITHERBY, HARRY FORBES, 3 Cannon Place, Hampstead, England ..   | 1916 |
| WORCESTER, Prof. DEAN C., Manila, P. I. ....  | 1903 |
| ZELEDON, Don JOSÉ C., San José, Costa Rica .....  | 1884 |

## MEMBERS.

- ALLEN, ARTHUR A., McGraw Hall, Cornell Univ., Ithaca, N. Y. (1909)1914  
 ALLEN, FRANCIS H., 4 Park St., Boston, Mass. (1888)1901  
 ALLEN, DR. GLOVER M., 234 Berkeley St., Boston, Mass. (1896)1904  
 ANDERSON, DR. RUDOLPH M., Mus. Geol. Survey, Ottawa, Canada.  
 (1907)1914  
 ATTWATER, H. P., 2120 Genesee St., Houston, Texas. (1891)1901  
 BAILEY, VERNON, 1834 Kalorama Ave., Washington, D. C. (1887)1901  
 BAILEY, MRS. VERNON, 1834 Kalorama Ave., Washington, D. C. (1885)1901  
 BAILY, WILLIAM L., Ardmore, Pa. (1886)1901  
 BARBOUR, DR. THOMAS, Mus. Comp. Zoölogy, Cambridge, Mass. (1903)1914  
 BARTSCH, PROF. PAUL, U. S. Nat. Museum, Washington, D. C. (1896)1902  
 BECK, ROLLO HOWARD, San José, R. R. A., Cal. (1894)1917  
 BERGTOLD, DR. W. H., 1159 Race St., Denver, Colo. (1889)1914  
 BOND, FRANK, 3127 Newark St., N. W., Washington, D. C. (1887)1901  
 BOWLES, JOHN HOOPER, The Woodstock, Tacoma, Wash. (1891)1910  
 BRAISLIN, DR. WILLIAM C., 425 Clinton Ave., Brooklyn, N. Y. (1894)1902  
 BROOKS, Major ALLAN, Okanagan Landing, B. C. (1902)1909  
 BROOKS, ENSIGN WM. SPRAGUE, 234 Berkeley St., Boston, Mass. (1907)1917  
 BRYAN, WILLIAM ALANSON, College of Hawaii, Honolulu, Hawaiian  
 Islands. (1898)1901  
 BURNS, FRANK L., Berwyn, Pa. (1891)1901  
 BUTLER, AMOS W., 52 Downey Ave., Irvington, Indianapolis, Ind. (1885)1901  
 CHAMBERS, W. LEE, Eagle Rock, Cal. (1907)1913  
 CHAPIN, Lieut. JAMES P., Amer. Mus. Nat. Hist., New York, N. Y.  
 (1906)1917  
 CLARK, DR. HUBERT LYMAN, Mus. Comparative Zoöl. Cambridge, Mass.  
 (1886)1902  
 DAGGETT, FRANK S., Museum, Exposition Park, Los Angeles, Cal.  
 (1889)1901  
 DAWSON, WM. L., R. D., No. 3, Box 110, Santa Barbara, Cal. (1895)1905  
 DEANE, WALTER, 29 Brewster St., Cambridge, Mass. (1897)1901  
 EATON, PROF. ELON HOWARD, 678 Main St., Geneva, N. Y. (1895)1907  
 EVERMANN, PROF. BARTON W., Cal. Acad. Sci., San Francisco, Cal.  
 (1883)1901  
 FINLEY, WILLIAM L., 651 East Madison St., Portland, Ore. (1904)1907  
 GAULT, BENJAMIN TRUE, Glen Ellyn, Ill. (1885)1903  
 GOLDMAN, Major EDWARD A., Biological Survey, Washington, D. C.  
 (1897)1902  
 HARPER, FRANCIS, 3001 24th St. N. E., Washington, D. C. (1907)1917  
 HERSEY, F. SEYMOUR, 6 Maple Ave., Taunton, Mass. (1911)1916  
 HOFFMANN, RALPH, 5554 Waterman Ave., St. Louis, Mo. (1893)1901

- HOLLISTER, NED, Nat. Zoological Park, Washington, D. C. .... (1894)1910  
 HOWELL, A. BRAZIER, Covina, Cal. .... (1909)1916  
 HOWELL, ARTHUR H., 2919 S. Dakota Ave., Washington, D. C. (1889)1902  
 JACOBS, J. WARREN, 404 S. Washington St., Waynesburg, Pa. (1889)1904  
 JEFFRIES, WILLIAM A., 11 Pemberton Square, Boston, Mass. (1883)1901  
 JOB, HERBERT K., 291 Main St., West Haven, Conn. .... (1896)1901  
 KALMBACH, EDWIN R., Biological Survey, Washington, D. C. (1910)1915  
 KENNARD, F. H., Dudley Road, Newton Centre, Mass. .... (1892)1912  
 KNOWLTON, F. H., U. S. Nat. Mus., Washington, D. C. .... (1883)1902  
 LAW, J. EUGENE, 833½ S. Catalina St., Los Angeles. .... (1907)1916  
 MACKAY, GEORGE H., 304 Bay State Road, Boston, Mass. .... (1890)1901  
 MAILLIARD, JOHN W., 230 California St., San Francisco, Cal. (1895)1901  
 MILLER, MRS. OLIVE THORNE, 5928 Hays Ave., Los Angeles, Cal. (1887)1901  
 MOORE, ROBERT THOMAS, Haddonfield, N. J. .... (1898)1914  
 MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa. .... (1887)1903  
 MORRIS, ROBERT O., 82 Temple St., Springfield, Mass. .... (1888)1904  
 MURDOCH, JOHN, 16 High Rock Way, Allston, Mass. .... (1883)1901  
 MURPHY, ROBERT C., Museum Brooklyn Institute, Eastern Parkway,  
 Brooklyn, N. Y. .... (1905)1914  
 NICHOLS, JOHN T., Am. Mus. Nat. Hist., New York, N. Y. .... (1901)1914  
 NORTON, ARTHUR H., Mus. Nat. Hist., 22 Elm St., Portland, Me. (1890)1902  
 PEARSON, T. GILBERT, 1974 Broadway, New York, N. Y. .... (1891)1902  
 PHILLIPS, Capt. JOHN C., Wenham, Mass. .... (1904)1912  
 PREBLE, EDWARD A., Biological Survey, Washington, D. C. .... (1892)1901  
 RATHBUN, SAMUEL F., 217 14th Ave., N., Seattle, Wash. .... (1893)1902  
 RHOADS, SAMUEL N., 81 Haddon Ave., Haddonfield, N. J. .... (1885)1901  
 RILEY, JOSEPH H., U. S. National Museum, Washington, D. C. (1897)1905  
 RIVES, Dr. WILLIAM C., 1702 Rhode Island Ave., Washington, D. C.  
 (1885)1901  
 ROBINSON, Col. WIRT, U. S. A., West Point, N. Y. .... (1897)1901  
 SETON, ERNEST THOMPSON, Greenwich, Conn. .... (1883)1901  
 \*SHERMAN, Miss ALTHEA R., National via McGregor, Iowa. (1907)1912  
 SHIRAS, Hon. GEORGE, 3d, Stoneleigh Court, Washington, D. C. (1907)1915  
 STEPHENS, FRANK, Nat. Hist. Museum, Balboa Park, San Diego, Cal.  
 (1883)1901  
 STRONG, Dr. REUBEN M., Vanderbilt Medical School, Nashville, Tenn.  
 (1889)1903  
 SWALES, BRADSHAW HALL, Mus. of Zool., Ann. Arbor, Mich. (1902)1909  
 THAYER, JOHN ELIOT, Lancaster, Mass. .... (1898)1905  
 TOWNSEND, Dr. CHARLES H., Aquarium, Battery Park, New York, N. Y.  
 (1883)1901  
 TOWNSEND, Dr. CHARLES WENDELL, 76 Marlborough St., Boston,  
 Mass. .... (1901)1905

|   |            |
|---|------------|
| TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa.     | (1888)1901 |
| TYLER, Dr. WINSOR M., 522 Mass. Ave., Lexington, Mass.        | (1912)1917 |
| WARREN, EDWARD ROYAL, 1511 Wood Ave., Colorado Springs, Colo. | (1902)1910 |
| WAYNE, ARTHUR T., Mt. Pleasant, S. C.                         | (1905)1906 |
| WETMORE, ALEX., Biological Survey, Washington, D. C.          | (1908)1912 |
| WILLETT, GEORGE, 2123 Court St., Los Angeles, Cal.            | (1912)1913 |
| WOLCOTT, Dr. ROBERT H., State University, Lincoln, Neb.       | (1901)1903 |
| WOOD, NORMAN A., Museum Univ. of Mich., Ann. Arbor, Mich.     | (1904)1912 |
| WRIGHT, Mrs. MABEL OSGOOD, Fairfield, Conn.                   | (1895)1901 |

## ASSOCIATES.

|   |      |
|---|------|
| ABBOTT, CLINTON GILBERT, Orchard Hill, Rhinebeck, N. Y.                     | 1898 |
| ABBOTT, Miss FLORENCE I., Upland Road, Andover, Mass.                       | 1917 |
| ADAMS, BENJAMIN, 476 5th Ave., New York, N. Y.                              | 1911 |
| ADAMS, WALLACE, U. S. Indian Service, Florence, Ariz.                       | 1901 |
| ADAMS, Dr. Z. B., 43 Cottage Farm Rd., Brookline, Mass.                     | 1908 |
| AIKEN, Hon. JOHN, Superior Court, Court House, Boston, Mass.                | 1905 |
| AIMAR, Dr. CHARLES PONS, 4 Vanderhorst St., Charleston, S. C.               | 1916 |
| ALEXANDER, Miss ANNIE M., 92 Sea View Ave., Piedmont, Cal.                  | 1911 |
| ALLEN, Mrs. J. T., 37 Mosswood Road, Berkeley, Cal.                         | 1916 |
| ALLEN, MARY P., 206 Moore St., Hackettstown, N. J.                          | 1913 |
| ANDERSON, Mrs. J. C., Great Barrington, Mass.                               | 1903 |
| ANGELL, WALTER A., 33 Westminster St., Providence, R. I.                    | 1901 |
| ANTHONY, Lieut. H. E., Amer. Mus. Nat. Hist., New York, N. Y.               | 1911 |
| APPEL, Wm. D., Kingsport, Tenn.   | 1917 |
| AREY, Dr. HAROLD C., Hospital Cottages for Children, Baldwinville,<br>Mass. | 1917 |
| ARMSTRONG, EDWARD, E., 207 N. Michigan Ave., Chicago, Ill.                  | 1904 |
| ARNOLD, EDWARD, Grand Trunk R'y., Montreal, Quebec.                         | 1894 |
| ARNOLD, Dr. W. W., 1st Nat. Bank Bldg., Colorado Springs, Colo.             | 1910 |
| ARTHUR, STANLEY CLISBY, 1109 Henry Clay Ave., New Orleans, La.              | 1916 |
| ASPINWALL, Mrs. CLARENCE A., 1839 Wyoming Ave., Washington,<br>D. C.        | 1916 |
| ATHERTON, EDWARD H., 82 Ruthven St., Roxbury, Mass.                         | 1917 |
| AVIS, EDWARD, Box 56, Enfield, Conn.  | 1908 |
| AYRES, Miss MARY ADELINE, 119 High St., Medford, Mass.                      | 1915 |
| BABCOCK, DEAN, Long's Peak, Colo.   | 1911 |
| BABCOCK, Lieut. HAROLD LESTER, Woodleigh Road, Dedham, Mass.                | 1916 |
| BACON, FRANCIS L., 236 Winona Ave., Germantown, Pa.                         | 1917 |
| BADÉ, Dr. Wm. FREDERIC, 2616 College Ave., Berkeley, Cal.                   | 1916 |



|   |      |
|---|------|
| BADGER, ARTHUR C., Dudley Road, Newton Centre, Mass.....              | 1917 |
| BAGG, AARON C., 70 Fairfield Ave., Holyoke, Mass.....                 | 1916 |
| BAGG, EGBERT, JR., 406 Genesee St., Utica, N. Y.....                  | 1916 |
| BAILEY, Prof. GUY A., Genesee, N. Y.....                              | 1910 |
| BAILEY, SAMUEL WALDO, 64 S. Mountain Road, Pittsfield, Mass.....      | 1909 |
| BAKER, Lieut. JOHN H., Nat. Cash Register Co., Dayton, Ohio.....      | 1911 |
| BALDWIN, ROGER N., 3739 Windsor Place, St. Louis, Mo.....             | 1904 |
| BALDWIN, S. PRENTISS, Williamson Bldg., Cleveland, Ohio.....          | 1917 |
| BALES, Dr. BLENN R., 149 W. Main St., Circleville, Ohio.....          | 1907 |
| BALL, Mrs. BENNET F., Oakville, Conn.....                             | 1905 |
| BALL, DAVID S., Spuyten Duyvil, New York, N. Y.....                   | 1913 |
| BALL, Dr. JAS. P., 5001 Frankford Ave., Philadelphia, Pa.....         | 1911 |
| BARBOUR, Rev. ROBERT, Y. M. C. A., Montclair, N. J.....               | 1902 |
| BARKER, Mrs. MERLE TAFT, 178 High St., Taunton, Mass.....             | 1915 |
| BARNARD, Judge JOB, 1306 Rhode Island Ave., Washington, D. C.....     | 1886 |
| BARNES, CLAUDE T., 359 Tenth Ave., Salt Lake City, Utah.....          | 1908 |
| BARNES, Hon. R. MAGOON, Lacon, Ill.....                               | 1889 |
| BARRETT, CHAS. H. M., 1339 Valley Place, S. E., Washington, D. C..... | 1912 |
| BARRETT, HAROLD LAWRENCE, 704 Centre St., Jamaica Plain, Mass.....    | 1909 |
| BARRY, Miss ANNA K., 5 Bowdoin Ave., Dorchester, Mass.....            | 1907 |
| BARTLETT, HENRY, 49 Middle St., Acushnet, Mass.....                   | 1917 |
| BARTLETT, Miss MARY F., 227 Commonwealth Ave., Boston, Mass.....      | 1912 |
| BARTRAM, EDWIN B., Strafford, Pa.....                                 | 1913 |
| BATCHELOR, MARION W., 27 Jassen Place, Kansas City, Mo.....           | 1916 |
| BATTEN, GEORGE, JR., 93 Union St., Montclair, N. J.....               | 1914 |
| BEMIS, BENJ. FRANKLIN, Gleasondale, Mass.....                         | 1916 |
| BELL, Dr. W. B., 803 Rittenhouse St., N. W. Washington, D. C.....     | 1912 |
| BENNETT, WILLIAM J., 1941 1st St. N. W., Washington, D. C.....        | 1901 |
| BENSON, C. STANLEY, 75 Plymouth St., North Abington, Mass.....        | 1915 |
| BICKNELL, Mrs. F. T., 319 S. Normandie Ave., Los Angeles, Cal.....    | 1913 |
| BIDDLE, Miss EMILY WILLIAMS, 2201 Sansom St., Philadelphia, Pa.....   | 1898 |
| BIGELOW, Dr. LYMAN F., 80 Winter St., Norwood, Mass.....              | 1914 |
| BLACKWELDER, ELIOT, Natural History Bldg., Urbana, Ill.....           | 1895 |
| BLOOMFIELD, Mrs. C. C., 723 Main St., W., Jackson, Mich.....          | 1901 |
| BOARDMAN, Miss E. D., 416 Marlborough St., Boston, Mass.....          | 1906 |
| BODINE, Mrs. DONALDSON, 4 Mills Place, Crawfordsville, Ind.....       | 1916 |
| BOGARDUS, Miss CHARLOTTE, Elm St., Coxsackie, N. Y.....               | 1909 |
| BOGERT, WILLIAM S., 2610 Eldridge St., Bellingham, Wash.....          | 1904 |
| BOLLES, Mrs. FRANK, 6 Berkeley St., Cambridge, Mass.....              | 1912 |
| BOLT, BENJAMIN FRANKLIN, 1421 Prospect Ave., Kansas City, Mo.....     | 1909 |
| BOND, HARRY L., Lakefield, Minn.....                                  | 1908 |
| BORLAND, WM. G., 7 Wall St., New York, N. Y.....                      | 1911 |
| BOSSON, CAMPBELL, 30 State St., Boston, Mass.....                     | 1906 |
| BOULTON, W. RUDYUD, JR., 338 1st St., Beaver, Pa.....                 | 1915 |
| BOURNE, THOS. L., Hamburg, N. Y.....                                  | 1914 |
| BOWDISH, B. S., Demarest, N. J.....                                   | 1891 |



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| BOWDISH, MRS. B. S., Demarest, N. J.....   | 1902 |
| BOWDITCH, Dr. HAROLD, 60 Harvard Ave., Brookline, Mass.....                        | 1900 |
| BOWDITCH, JAMES H., 903 Tremont Bldg., Boston, Mass.....                           | 1913 |
| BOYD, MRS. HARRIET T., 17 Marsh St., Dedham, Mass.....                             | 1917 |
| BOYLE, HOWARTH S., Amer. Mus. Nat. Hist., New York, N. Y.....                      | 1916 |
| BOYNTON, CHARLES T., 1005 S. Sheridan Road, Highland Park, Ill..                   | 1912 |
| BRACKEN, MRS. HENRY M., 1010 Fourth St., S.E., Minneapolis, Minn..                 | 1897 |
| BRADBURY, W. C., 1440 Race St., Denver, Colo.....                                  | 1915 |
| BRADLEE, THOMAS STEVENSON, Somerset Club, Boston, Mass.....                        | 1902 |
| BRAINERD, BARRON, 57 Monmouth St., Brookline, Mass.....                            | 1917 |
| BRANDRETH, COURTENAY, Ossining, N. Y.....  | 1905 |
| BRANDRETH, FRANKLIN, Ossining, N. Y.....   | 1889 |
| BRANDT, HERBERT W., 2025 East 88th St., Cleveland, Ohio.....                       | 1915 |
| BREWSTER, EDWARD EVERETT, 316 East C St., Iron Mountain, Mich.                     | 1893 |
| BREWSTER, MRS. WILLIAM, 145 Brattle St., Cambridge, Mass.....                      | 1912 |
| BRIDGE, EDMUND, 52 Wyman St., West Medford, Mass.....                              | 1910 |
| BRIDGE, MRS. EDMUND, 52 Wyman St., West Medford, Mass.....                         | 1902 |
| BRIGGS, JOSEPH S., 1372 Powell St., Norristown, Pa.....                            | 1916 |
| BRIMLEY, H. H., Raleigh, N. C.....   | 1904 |
| BRISTOL, JOHN I. D., 1 Madison Ave., New York, N. Y.....                           | 1907 |
| BRITTEN, G. S., 807 Walnut Ave., Syracuse, N. Y.....                               | 1913 |
| BROCK, Dr. HENRY HERBERT, 687 Congress St., Portland, Me.....                      | 1894 |
| BROCKWAY, ARTHUR W., Hadlyme, Conn.....  | 1912 |
| BROOKS, Rev. EARLE AMOS, 419 N. River Ave., Weston, W. Va.....                     | 1892 |
| BROOKS, MAURICE GRAHAM, French Creek, W. Va.....                                   | 1915 |
| BROWN, Miss ANNIE H., 31 Maple St., Stoneham, Mass.....                            | 1909 |
| BROWN, EDWARD J., 1609 S. Van Ness Ave., Los Angeles, Cal.....                     | 1891 |
| BROWN, G. FRANKLIN, "Stonebridge," Needham, Mass.....                              | 1917 |
| BROWN, HARRY A., 40 Talbot St., Lowell, Mass.....                                  | 1912 |
| BROWN, MRS. HENRY TEMPLE, Lancaster, Mass.....                                     | 1912 |
| BROWN, PHILIP G., 85 Vaughan St., Portland, Me.....                                | 1911 |
| BROWN, STEWARDSON, 20 E. Penn St., Germantown, Philadelphia, Pa.                   | 1895 |
| BROWN, WM. JAMES, 250 Oliver Ave., Westmount, Quebec.....                          | 1908 |
| BROWNING, WM. HALL, 16 Cooper Square, New York, N. Y.....                          | 1911 |
| BRUEN, FRANK, 69 Prospect St., Bristol, Conn.....                                  | 1908 |
| BRUMBAUGH, CHALMERS S., 1020 Cathedral St., Baltimore, Md.....                     | 1916 |
| BRYANT, HAROLD CHILD, Mus. Vert. Zool., Univ. of California,<br>Berkeley, Cal..... | 1913 |
| BUNKER, CHARLES D., Kansas Univ. Museum, Lawrence, Kan.....                        | 1916 |
| BURGESS, JOHN KINGSBURY, "Broad Oak," Dedham, Mass.....                            | 1898 |
| BURLEIGH, THOS. D., 825 N. Negley Ave., Pittsburgh, Pa.....                        | 1913 |
| BURNETT, WILLIAM L., State Agric. College, Fort Collins, Colo.....                 | 1895 |
| BURTCH, VERDI, Branchport, N. Y.....   | 1903 |
| BURTON, E. ROY, 60 Park Ave., Delaware, Ohio.....                                  | 1916 |
| BUTTERWICK, CLAUDE A., 116 Broad St., Telford, Pa.....                             | 1917 |
| CADUC, EUGENE E., 512 Massachusetts Ave., Boston, Mass.....                        | 1910 |

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| CAESAR, HENRY A., 50 Union Square, New York, N. Y.....                                 | 1916 |
| CAHN, ALVIN R., 4720 Greenwood Ave., Chicago, Ill.....                                 | 1917 |
| CALLENDER, JAMES PHILLIPS, 32 Broadway, New York, N. Y.....                            | 1903 |
| CAMPBELL, Mrs. J. B., 263 W. 7th St., Erie, Pa.....                                    | 1917 |
| CANTWELL, GEORGE G., 901 W. Main Ave., Puyallup, Wash.....                             | 1916 |
| CARNE, Mrs. THOMAS, 41 Melrose St., Adams, Mass.....                                   | 1917 |
| CARPENTER, Rev. CHARLES KNAPP, 174 Forest Ave., Oak Park, Ill.....                     | 1894 |
| CARPENTER, GEORGE I., 129 Dean St., Brooklyn, N. Y.....                                | 1907 |
| CARPENTER, HALL B., Kappa Sigma House, Amherst, Mass.....                              | 1916 |
| CARRIGER, H. W., 5185 Trask St., Fruitvale Station, Oakland, Cal.....                  | 1913 |
| CARTER, JOHN D., Lansdowne, Pa.....  | 1907 |
| CASH, HARRY A., 448 Hope St., Providence, R. I.....                                    | 1898 |
| CHAMBERLAIN, CHAUNCY W., 36 Lincoln St., Boston, Mass.....                             | 1885 |
| CHAPIN, Prof. ANGIE CLARA, Wellesley College, Wellesley, Mass.....                     | 1896 |
| CHAPMAN, Mrs. F. M., Englewood, N. J.....  | 1908 |
| CHAPMAN, ROYAL N., Dept. Animal Biology, Univ. of Minnesota,<br>Minneapolis, Minn..... | 1911 |
| CHASE, SIDNEY, Nantucket, Mass.....  | 1904 |
| CHEESMAN, MORTON R., R. F. D. 3, Box 61, Murray, Utah.....                             | 1911 |
| CHENEY, Rev. ROBERT F., Southboro, Mass.....   | 1917 |
| CHRISTY, BAYARD H., 403 Frederick Ave., Sewickley, Pa.....                             | 1901 |
| CLARK, CHARLES A., 60 Lynnfield St., East Lynn, Mass.....                              | 1917 |
| CLARK, CLARENCE H., Lubec, Me.....   | 1913 |
| CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.....                                    | 1895 |
| CLARKE, CHARLES E., 11 Chetwynd Road, Tufts College, Mass.....                         | 1911 |
| CLARKE, Miss HARRIET E., 9 Chestnut St., Worcester, Mass.....                          | 1896 |
| CLARKE, Miss MARY F., Bristow, Va.....   | 1916 |
| CLEAVES, HOWARD H., Public Museum, New Brighton, N. Y.....                             | 1907 |
| CLEVELAND, Dr. CLEMENT, 925 Park Ave., New York, N. Y.....                             | 1903 |
| CLEVELAND, Miss LILIAN, Woods Edge Road, West Medford, Mass.....                       | 1906 |
| COALE, HENRY K., Highland Park, Ill.....   | 1883 |
| COBB, Miss ANNIE W., 20 Amsden St., Arlington, Mass.....                               | 1909 |
| COBB, PHILIP HACKER, 35 Matthews Hall, Cambridge, Mass.....                            | 1917 |
| COBB, Dr. STANLEY, 206 E. Chase St., Baltimore, Md.....                                | 1909 |
| CODY, Prof. WALTER GUYTON, 69 High St., Middletown, Conn.....                          | 1916 |
| COFFIN, Mrs. PERCIVAL B., 3232 Groveland Ave., Chicago, Ill.....                       | 1905 |
| COFFIN, ROBERT L., Mass. Agric'l. Exp. Sta., Amherst, Mass.....                        | 1917 |
| COGGINS, HERBERT L., 463 114th St., Oakland, Cal.....                                  | 1913 |
| COLBURN, ALBERT E., 806 S. Broadway, Los Angeles, Cal.....                             | 1891 |
| COLE, Dr. LEON J., College of Agric., Univ. of Wis., Madison, Wis.....                 | 1908 |
| COMMONS, Mrs. F. W., 608 Chamber of Commerce, Minneapolis, Minn.....                   | 1902 |
| CONE, Mrs. HENRY F., 4 Trinity St., Hartford, Conn.....                                | 1917 |
| CONEY, Mrs. GEO. H., R. F. D., Box 25, Windsor, Conn.....                              | 1906 |
| COOK, FREDERICK W., 1604 East Harrison St., Seattle, Wash.....                         | 1915 |
| COOK, Miss LILIAN GILLETTE, Long Lea, Amherst, Mass.....                               | 1899 |
| COOKE, GEORGE J., Ambler, Pa.....  | 1916 |

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| COOKE, MISS MAY THACHER, 1328 Twelfth St., Washington, D. C.      | 1915 |
| COPE, FRANCIS R., Jr., Dimock, Pa.                                | 1892 |
| COPELAND, MISS ADA B., 1103 White Ave., Grand Junction, Colo.     | 1917 |
| COPELAND, MANTON, 88 Federal St., Brunswick, Me.                  | 1900 |
| CORRINGTON, JULIAN DANA, 406 University Ave., Ithaca, N. Y.       | 1916 |
| CRAIG, WALLACE, Univ. of Maine, Orono, Me.                        | 1912 |
| CRAM, R. J., 26 Hancock Ave., W., Detroit, Mich.                  | 1893 |
| CRANDALL, LEE S., N. Y. Zool. Park, New York, N. Y.               | 1909 |
| CRANE, MISS CLARA L., Dalton, Mass.                               | 1904 |
| CRANE, MRS. ZENAS, Dalton, Mass.                                  | 1904 |
| CREHORE, FREDERIC M., Box 1252, Boston, Mass.                     | 1913 |
| CRESSY, MRS. A. S., 27 Baltimore St., Hartford, Conn.             | 1912 |
| CROSBY, MAUNSELL S., Rhinebeck, N. Y.                             | 1904 |
| CUMMINGS, MISS EMMA G., 16 Kennard Road, Brookline, Mass.         | 1903 |
| CURRIE, ROLLA P., 632 Keefer Place, N. W., Washington, D. C.      | 1895 |
| CURRIER, EDMONDE SAMUEL, 416 E. Chicago St., Portland, Ore.       | 1894 |
| CURRY, HASKELL BROOKS, 60 Bay State Road, Boston, Mass.           | 1916 |
| CURTIS, CHARLES P., 244 Beacon St., Boston, Mass.                 | 1915 |
| CUSHMAN, MISS ALICE, 919 Pine St., Philadelphia, Pa.              | 1910 |
| DANA, WM. SHEPHERD, Moriches, N. Y.                               | 1916 |
| DANE, MRS. ERNEST B., Chestnut Hill, Mass.                        | 1912 |
| DANFORTH, STUART F., 115 N. 6th Ave., New Brunswick, N. J.        | 1916 |
| DANKERS, CHARLES E., Corning, Mo.                                 | 1916 |
| DAVENPORT, MRS. ELIZABETH B., Brattleboro, Vt.                    | 1898 |
| DAVIDSON, MRS. GAYLORD, 1302 W., S. Grand Ave., Springfield, Ill. | 1912 |
| DAVIS, CHARLES H., 700 N. Hamilton St., Saginaw, W. S., Mich.     | 1906 |
| DAY, CHESTER SESSIONS, 1711 Commonwealth Ave., Boston, Mass.      | 1897 |
| DEAN, R. H., 720 Quintard Ave., Anniston, Ala.                    | 1913 |
| DEANE, GEORGE CLEMENT, 80 Sparks St., Cambridge, Mass.            | 1899 |
| DECKER, HAROLD K., 250 Livermore Ave., West New Brighton, N. Y.   | 1916 |
| DELOACH, R. J. H., 6605 Harvard Ave., Chicago, Ill.               | 1910 |
| DENSMORE, MISS MABEL, 910 4th St., Red Wing, Minn.                | 1910 |
| DERBY, Major RICHARD, 116 E. 79th St., New York, N. Y.            | 1898 |
| DERBY, WILLIAM M., Jr., 4857 Kimbark Ave., Chicago, Ill.          | 1916 |
| DEWEY, Dr. CHARLES A., 78 Plymouth Ave., Rochester, N. Y.         | 1900 |
| DEXTER, LEWIS, 1889 Elm St., Manchester, N. H.                    | 1915 |
| DICKEY, DONALD R., San Rafael Heights, Pasadena, Cal.             | 1907 |
| DICKEY, SAMUEL S., Waynesburg, Pa.                                | 1905 |
| DILL, Prof. HOMER R., State Univ. of Iowa, Iowa City, Ia.         | 1916 |
| DILLE, FREDERICK M., Valentine, Neb.                              | 1892 |
| DIMICK, CHARLES W., 1007 Tremont Bldg., Boston, Mass.             | 1917 |
| DIONNE, C. E., Laval University, Quebec, Canada.                  | 1893 |
| DIXON, FREDERICK J., 111 Elm Ave., Hackensack, N. J.              | 1891 |
| DIXON, JOSEPH S., Univ. of Cal., Berkeley, Cal.                   | 1917 |
| DORN, Prof. LOUIS, Concordia College, Fort Wayne, Ind.            | 1912 |
| DRUMMOND, MISS MARY, 510 Spring Lane, Lake Forest, Ill.           | 1904 |
| DULL, MRS. A. P. L., 211 N. Front St., Harrisburg, Pa.            | 1900 |

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| DURFEE, OWEN, Box 125, Fall River, Mass.....                           | 1887 |
| DURYEA, Miss ANNIE B., 62 Washington St., Newark, N. J.....            | 1911 |
| DYKE, ARTHUR CURTIS, 205 Summer St., Bridgewater, Mass.....            | 1902 |
| EASTMAN, Major FRANCIS B., Camp Grant, Ill.....                        | 1909 |
| EATON, Miss MARY S., 8 Monument St., Concord, Mass.....                | 1909 |
| EATON, SCOTT HARRISON, Box 653, Lawrenceville, Ill.....                | 1912 |
| EDSON, JOHN M., Marietta Road, Bellingham, Wash.....                   | 1886 |
| EDSON, WM. L. G., 54 Fairview Avenue, Rochester, N. Y.....             | 1916 |
| EHINGER, Dr. CLYDE E., 100 W. Rosedale Ave., West Chester, Pa... 1904  |      |
| EIFRIG, Prof. C. W. GUSTAVE, 504 Monroe Ave., Oak Park, Ill.....       | 1901 |
| EIMBECK, Dr. AUGUST F., New Haven, Mo.....                             | 1906 |
| EKBLAW, WALTER ELMER, 255 Nat. Hist. Bldg., Urbana, Ill.....           | 1911 |
| ELDRIDGE, ARTHUR S., South Lincoln, Mass.....                          | 1912 |
| ELLIOT, Mrs. J. W., 124 Beacon St., Boston, Mass.....                  | 1912 |
| ELLS, GEORGE P., Norwalk, Conn.....                                    | 1904 |
| EMERSON, W. OTTO, Hayward, Cal.....                                    | 1916 |
| EMMONS, RUPERT A., Chester, Conn.....                                  | 1913 |
| EMORY, Mrs. MARY DILLE, 156 Foundry St., Morgantown, W. Va... 1899     |      |
| ERRETT, RUSSELL, Terrace Park, Ohio.....                               | 1915 |
| EVANS, Dr. EVAN M., 56 East 55th St., New York, N. Y.....              | 1916 |
| EVANS, WILLIAM B., Moorestown, N. J.....                               | 1897 |
| FANNING, Dr. WALTER G., 2 Hunt St., Danvers, Mass.....                 | 1917 |
| FARLEY, JOHN A., 52 Cedar St., Malden, Mass.....                       | 1904 |
| FARQUHAR, ARTHUR, York, Pa.....  | 1916 |
| FARRAR, EDWARD ROGERS, South Lincoln, Mass.....                        | 1917 |
| FAXON, ALLAN HART, 7 Edwards St., Southbridge, Mass.....               | 1916 |
| FAY, DUDLEY B., 287 Beacon St., Boston, Mass.....                      | 1916 |
| FAY, Lieut. S. PRESCOTT, 53 State St., Boston, Mass.....               | 1907 |
| FELGER, ALVA HOWARD, North Side High School, Denver, Colo.... 1898     |      |
| FELL, Miss EMMA TREGO, 1534 N. Broad St., Philadelphia, Pa.....        | 1903 |
| FIELD, Dr. GEORGE W., Biological Survey, Washington, D. C.....         | 1910 |
| FINNEY, Mrs. E. S., St. Davids, Pa.....                                | 1916 |
| FISHER, Miss ELIZABETH WILSON, 2222 Spruce St., Philadelphia, Pa. 1896 |      |
| FISHER, Dr. G. CLYDE, American Mus. Nat. Hist., New York, N. Y. 1908   |      |
| FLANAGAN, JOHN H., 89 Power St., Providence, R. I.....                 | 1898 |
| FLEISCHER, EDWARD, 1591 Union St., Brooklyn, N. Y.....                 | 1916 |
| FLETCHER, Mrs. MARY E., Proctorsville, Vt.....                         | 1898 |
| FLOYD, CHARLES BENTON, 19 Woodbine St., Auburndale, Mass.... 1916      |      |
| FOOT, Dr. NATHAN CHANDLER, Hyde Park, Mass.....                        | 1916 |
| FOOTE, Miss F. HUBERTA, 260 Valentine Lane, Yonkers, N. Y.....         | 1897 |
| FORBES, ALEXANDER, Milton, Mass.....                                   | 1912 |
| FORBES, RALPH E., 328 Adams St., Milton, Mass.....                     | 1917 |
| FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.....               | 1901 |
| FOSTER, FRANK B., Haverford, Pa.....                                   | 1916 |
| FOWLER, FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Cal.... 1892     |      |
| FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.....           | 1898 |



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| FOX, DR. WILLIAM H., 1826 Jefferson Place, Washington, D. C.       | 1883 |
| FRANCIS, NATHANIEL A., 35 Davis Ave., Brookline, Mass.             | 1913 |
| FRASER, DONALD, Johnstown, N. Y.                                   | 1902 |
| FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.             | 1903 |
| FRENCH, CHARLES H., Canton, Mass.                                  | 1904 |
| FRENCH, Mrs. CHAS. H., Canton, Mass.                               | 1908 |
| FROTHINGHAM, Mrs. RANDOLPH, The Copley Plaza, Boston, Mass.        | 1913 |
| FRY, HENRY J., 152 W. Lincoln Ave., Mt. Vernon, N. Y.              | 1916 |
| FULLER, HENRY C., 1348 Euclid St., Washington, D. C.               | 1916 |
| FULLER, Mrs. T. OTIS, Needham, Mass.                               | 1909 |
| GABRIELSON, IRA N., Biological Survey, Washington, D. C.           | 1912 |
| GANIER, ALBERT F., 1221 17th Ave., S., Nashville, Tenn.            | 1917 |
| GARDINER, CHARLES BARNES, 175 W. Main St., Norwalk, Ohio           | 1903 |
| GARST, Dr. JULIUS, 29 Oread St., Worcester, Mass.                  | 1916 |
| GERTKEN, Prof. SEVERIN, St. John's University, Collègeville, Minn. | 1912 |
| GIANINI, CHAS. A., Poland, N. Y.                                   | 1911 |
| GIBSON, LANGDON, 5 Union St., Schenectady, N. Y.                   | 1887 |
| GILCHRIST, DONALD A., Care of Extension Service, Tucson, Ariz.     | 1917 |
| GILMAN, M. FRENCH, Fort Bidwell, Cal.                              | 1907 |
| GLADDING, Mrs. JOHN R., 30 Stimson Ave., Providence, R. I.         | 1912 |
| GLEASON, Mrs. C. H., 700 Madison Ave., S. E., Grand Rapids, Mich.  | 1917 |
| GODING, EDWARD N., 73 Tremont St., Boston, Mass.                   | 1916 |
| GOELITZ, WALTER A., 1622 Judson Ave., Ravinia, Ill.                | 1916 |
| GOLDMAN, LUTHER J., Pocatello, Idaho                               | 1916 |
| GOLSAN, LEWIS S., Box 97, Prattville, Ala.                         | 1912 |
| GOODRICH, Miss JULIET T., 1210 Astor St., Chicago, Ill.            | 1904 |
| GORDON, HARRY E., 168 Asbury St., Rochester, N. Y.                 | 1911 |
| GORST, CHARLES C., 2 Arnold Circle, Cambridge, Mass.               | 1916 |
| GOULD, ALFRED M., Malden, Mass.                                    | 1916 |
| GOULD, JOSEPH E., Arcadia, Fla.                                    | 1889 |
| GRAHAM, Wm. J., Alledo, Ill.                                       | 1909 |
| GRANGER, Miss HELEN, Peterborough, N. H.                           | 1904 |
| GRANGER, WALTER, Amer. Mus. Nat. Hist., New York, N. Y.            | 1891 |
| GRANT, Wm. W., 600 Castle St., Geneva, N. Y.                       | 1910 |
| GRAVES, Mrs. CHARLES B., 4 Mercer St., New London, Conn.           | 1905 |
| GRAY, GEORGE M., Box 89, Woods Hole, Mass.                         | 1916 |
| GREEN, HORACE OAKES, 114 North Ave., Wakefield, Mass.              | 1917 |
| GREENOUGH, HENRY VOSE, 1134 Beacon St., Brookline, Mass.           | 1901 |
| GREENWOOD, FREDERICK, 1724 8th Ave., Spokane, Wash.                | 1917 |
| GREGORY, RAYMOND J., Princeton, Mass.                              | 1917 |
| GREGORY, STEPHEN S., Jr., 52 Cedar St., Chicago, Ill.              | 1916 |
| GRIFFIN, BERTRAM S., 22 Currier Ave., Haverhill, Mass.             | 1917 |
| GRISCOM, Lieut. LUDLOW, 20 Fifth Ave., New York, N. Y.             | 1908 |
| GROW, Mrs. EUGENE J., Lebanon, N. H.                               | 1916 |
| GUILD, HENRY R., 102 Beacon St., Boston, Mass.                     | 1912 |
| HADLEY, ALDEN H., Monrovia, Indiana                                | 1906 |



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| HAGAR, Lieut. J. A., 79 Washington Park, Newtonville, Mass.....   | 1914 |
| HAGER, GEORGE W., R. F. D. 3, Peterboro, N. H.....                | 1917 |
| HALL, F. GREGORY, Milton, Wis.....                                | 1917 |
| HALL, WM. WEBSTER, Jr., 15 East 75th St., New York, N. Y.....     | 1917 |
| HANDLEY, CHARLES O., Lewisburg, W. Va.....                        | 1916 |
| HANKINSON, THOS. LEROY, 900 11th St., Charleston, Ill.....        | 1897 |
| HARDON, Mrs. HENRY W., Wilton, Conn.....                          | 1905 |
| HARRINGTON, RALPH M., 953 Central Y. M. C. A., Brooklyn, N. Y.... | 1915 |
| HARRIS, HARRY, Kansas City, Mo.....                               | 1911 |
| HARRISON, RICHARD C., 142 Huntington St., New Haven, Conn.....    | 1916 |
| HARVEY, JOHN L., Mercantile Bldg., Waltham, Mass.....             | 1916 |
| HASKELL, Miss SADIA, 1209 12th St., N. W., Washington, D. C....   | 1916 |
| HATCH, Dr. ROYAL, 578 Washington St., Wellesley, Mass.....        | 1916 |
| HATHAWAY, HARRY S., Box 1466, Providence, R. I.....               | 1897 |
| HAVEMEYER, H. O., Jr., Mahwah, N. J.....                          | 1893 |
| HELME, ARTHUR H., Miller Place, N. Y.....                         | 1888 |
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| HENDERSON, WALTER C., 4727 13th St., N. W., Washington, D.C....   | 1917 |
| HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....         | 1885 |
| HENNESSEY, FRANK C., 457 Albert St., Ottawa, Canada.....          | 1914 |
| HERMANN, THEODORE L., 273 Neal Dow Ave., W. New Brighton, N.Y.    | 1916 |
| HERRICK, FRANCIS H., Adelbert College, Cleveland, Ohio.....       | 1913 |
| HERRICK, HAROLD, 123 William St., New York, N. Y.....             | 1905 |
| HERRICK, NEWBOLD L., Cedarhurst, N. Y.....                        | 1913 |
| HERRICK, N. LAWRENCE, Jr., Cedarhurst, N. Y.....                  | 1917 |
| HILL, JAMES HAYNES, Box 485, New London, Conn.....                | 1897 |
| HILL, Mrs. THOMAS R., Box 491, Chautauqua, N. Y.....              | 1903 |
| HINCKLEY, GEO. LYMAN, Redwood Library, Newport, R. I.....         | 1912 |
| HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio....   | 1899 |
| HIX, GEORGE E., 100 W. 91st St., New York, N. Y.....              | 1904 |
| HOLLAND, HAROLD MAY, 320 S. Grammercy Place, Los Angeles, Cal..   | 1910 |
| HOLLAND, Dr. WILLIAM J., Carnegie Museum, Pittsburgh, Pa.....     | 1899 |
| HOLLISTER, WARREN D., 2527 Allison St., Denver, Colo.....         | 1901 |
| HOLMAN, RALPH H., 33 Chestnut St., Stoneham, Mass.....            | 1907 |
| HOLT, ERNEST G., Biological Survey, Washington, D. C.....         | 1911 |
| HOLTON, OLIVER W., 107 Edgemoor Lane, Ithaca, N. Y.....           | 1916 |
| HONYWILL, ALBERT W., Jr., 31 Barker Ave., Hartford, Conn.....     | 1907 |
| HORSFALL, ROBERT BRUCE, 1457 E. 18th St., Portland, Ore.....      | 1905 |
| HORTON, ISAAC CHESTER, 2207 Washington St., Canton, Mass.....     | 1916 |
| HOTCHKISS, HIRAM A., Harding, Mass.....                           | 1917 |
| HOWLAND, R. H., 164 Wildwood Ave., Upper Montclair, N. J.....     | 1903 |
| HOYT, WILLIAM H., Box 425, Stamford, Conn.....                    | 1907 |
| HUBBARD, C. ANDRESEN, 1249 E. Harrison St., Portland, Ore.....    | 1916 |
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| HUBBARD, RALPH, 516 Stewart Ave., Ithaca, N. Y.....               | 1916 |
| HUBBARD, Mrs. SARA A., 177 Woodruff Ave., Brooklyn, N. Y.....     | 1891 |
| HUBER, WHARTON, Gwynedd Valley, Pa.....                           | 1915 |

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| HUSSEY, ROLAND F., 1308 E. Anne St., Ann Arbor, Mich.....                    | 1915 |
| INGERSOLL, ALBERT M., 908 F St., San Diego, Cal.....                         | 1885 |
| ISHAM, CHAS. B., 27 W. 67 St., New York, N. Y.....                           | 1891 |
| JACK, EDWIN L., 134 William St., Portland, Me.....                           | 1916 |
| JACKSON, DR. HARTLEY H. T., Biological Survey, Washington, D. C....          | 1910 |
| JACKSON, THOMAS H., 304 N. Franklin St., West Chester, Pa.....               | 1888 |
| JAMES, NORMAN, Catonsville, Md.....  | 1913 |
| JENKS, CHAS. W., Bedford, Mass.....  | 1912 |
| JENNEY, CHARLES F., 100 Gordon Ave., Hyde Park, Mass.....                    | 1905 |
| JENNINGS, RICHARD D., 129 Harrison St., East Orange, N. J.....               | 1913 |
| JENSEN, J. K., U. S. Indian School, Santa Fé, N. Mex.....                    | 1912 |
| JEWETT, STANLEY G., Pendleton, Ore.....                                      | 1906 |
| JOHNSON, FRANK E., 16 Amackassin Terrace, Yonkers, N. Y.....                 | 1888 |
| JOHNSON, MRS. GRACE PETTIS, City Library Asso., Springfield, Mass..          | 1908 |
| JOHNSON, JULIUS M., 77 Herkimer St., Brooklyn, N. Y.....                     | 1913 |
| JOHNSON, WILBUR WALLACE, 144 Harrison St., East Orange, N. J....             | 1914 |
| JONES, DR. LOMBARD CARTER, Falmouth, Mass.....                               | 1917 |
| JONES, MRS. RUTH HARVEY, 1203 Ryland Ave., Cincinnati, Ohio.....             | 1902 |
| JORDAN, A. H. B., Lowell, Wash.....  | 1888 |
| JUMP, MRS. EDWIN R., 97 Oakleigh Road, Newton, Mass.....                     | 1910 |
| JUNKIN, FRANCIS T. A., 2541 Michigan Ave., Chicago, Ill.....                 | 1917 |
| KEATS, JAMES EDWARD, 328 St. George St., London, Ontario.....                | 1899 |
| KELLOGG, RALPH T., Silver City, N. M.....                                    | 1913 |
| KELSO, DR. JOHN E. H., Edgewood, Lower Arrow Lake, B. C.....                 | 1915 |
| KENISTON, ALLAN, Edgartown, Mass.....  | 1917 |
| KENNEDY, DR. HARRIS, Readville, Mass.....                                    | 1916 |
| KENT, DUANE E., 47 West St., Rutland, Vt.....                                | 1913 |
| KENT, EDWIN C., 156 Broadway, New York, N. Y.....                            | 1907 |
| KERMODE, FRANCIS, Provincial Museum, Victoria, B. C.....                     | 1904 |
| *KIDDER, NATHANIEL T., Milton, Mass.....                                     | 1906 |
| KILGORE, WILLIAM, JR., 132 Orlin Ave., S. E., Minneapolis, Minn.....         | 1906 |
| KINGSBURY, FREDERICK S., Needham, Mass.....                                  | 1916 |
| KING, LEROY, 20 E. 84th St., New York, N. Y.....                             | 1901 |
| KIRKHAM, MRS. JAMES W., 275 Maple St., Springfield, Mass.....                | 1904 |
| *KIRKHAM, STANTON D., 152 Howell St., Canandaigua, N. Y.....                 | 1910 |
| KIRKWOOD, FRANK C., R. F. D. 3, Monkton, Md.....                             | 1892 |
| KITTREDGE, LIEUT. JOSEPH, JR., Engineers, H. L. C., A. E. F., France         | 1910 |
| KLOSEMAN, MISS JESSIE E., Beal Hall, 20 Charlesgate W., Boston,<br>Mass..... | 1909 |
| KNAEBEL, ERNEST, 3707 Morrison St., Chevy Chase, D. C.....                   | 1906 |
| KNAPP, MRS. HENRY A., 301 Quincy Ave., Scranton, Pa.....                     | 1907 |
| KNOLHOFF, FERDINAND WILLIAM, Amityville, N. Y.....                           | 1890 |
| KRETZMAN, PROF. P. E., 1230 St. Anthony Ave., St. Paul, Minn.....            | 1913 |

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| KUSER, ANTHONY R., Bernardsville, N. J.....                          | 1908 |
| KUSER, MRS. ANTHONY R., Bernardsville, N. J.....                     | 1910 |
| KUSER, JOHN DRYDEN, Bernardsville, N. J.....                         | 1910 |
| LACEY, HOWARD GEORGE, R. F. D. 1, Kerrville, Texas.....              | 1899 |
| LADD, HARRY STEPHEN, 4354 McPherson Ave., St. Louis, Mo.....         | 1917 |
| LaDOW, STANLEY V., 622 W. 113th St., New York, N. Y.....             | 1913 |
| LAING, HAMILTON M., 1277 E. 32nd St., Portland, Ore.....             | 1917 |
| LAMB, CHAS. R., 8 Highland St., Cambridge, Mass.....                 | 1912 |
| LANCASHIRE, MRS. JAMES HENRY, 7 East 75th St., New York, N. Y.....   | 1909 |
| LANG, HERBERT, Amer. Mus. Nat. Hist., New York, N. Y.....            | 1907 |
| LANTZ, Prof. DAVID E., 1443 Belmont St., Washington, D. C.....       | 1885 |
| LATHAM, ROY, Orient, N. Y.....                                       | 1916 |
| LAURENT, PHILIP, 31 E. Mt. Airy Ave., Philadelphia, Pa.....          | 1902 |
| LAWSON, RALPH, 88 Washington Sq. East, Salem, Mass.....              | 1917 |
| LEE, JOHN C., Grove St., Wellesley, Mass.....                        | 1917 |
| LEISTER, CLAUDE W., 113 Osmun Place, Ithaca, N. Y.....               | 1916 |
| LENGERKE, JUSTUS VON, 200 5th Ave., New York, N. Y.....              | 1907 |
| LEOPOLD, ALDO, 135 S. 14th St., Albuquerque, N. Mex.....             | 1916 |
| LEOPOLD, NATHAN, JR., 4754 Greenwood Ave., Chicago, Ill.....         | 1916 |
| LEVY, MRS. WILLIAM, Alton Bay, N. H.....                             | 1915 |
| LEWIS, Serg. Major HARRISON F., R. R. 2, Yarmouth, Nova Scotia.....  | 1912 |
| LEWIS, MRS. HERMAN E., 120 Grove St., Haverhill, Mass.....           | 1912 |
| LIGON, J. STOKLEY, Box 131, Albuquerque, New Mexico.....             | 1912 |
| LINCOLN, FREDERICK CHARLES, Colo. Mus. Nat. Hist., Denver, Colo..... | 1910 |
| LINGS, GEO. H., Richmond Hill, Cheadle, Cheshire, England.....       | 1913 |
| LITTLE, LUTHER 2d, 519 Stimson Bldg., Los Angeles, Cal.....          | 1913 |
| LLOYD, HOYES, 11 Swanwick Ave., Toronto, Canada.....                 | 1916 |
| LORD, THOMAS HENRY, Newington, N. H.....                             | 1916 |
| LORING J. ALDEN, Owego, N. Y.....                                    | 1917 |
| LOW, ETHELBERT T., 30 Broad St., New York, N. Y.....                 | 1907 |
| LUCE, MRS. FRANCIS P., Box 216, Vineyard Haven, Mass.....            | 1912 |
| LUM, EDWARD H., Chatham, N. J.....                                   | 1904 |
| LUND, EDWARD G., 529 Beacon St., Boston, Mass.....                   | 1915 |
| MABBOTT, DOUGLAS C., Biological Survey, Washington, D. C.....        | 1916 |
| MACDONALD, MISS HAZEL, Kersey, Colo.....                             | 1916 |
| MACKIE, DR. WILLIAM C., 54 Coolidge St., Brookline, Mass.....        | 1908 |
| MACLAY, MARK W., Jr., 830 Park Ave., New York, N. Y.....             | 1905 |
| MACREYNOLDS, GEORGE, Doylestown, Pa.....                             | 1917 |
| MADDOCK, MISS EMELINE, 6386 Drexel Road, Overbrook, Pa.....          | 1897 |
| MADISON, HAROLD L., Park Museum, Providence, R. I.....               | 1912 |
| MAHER, J. E., 351 Communipaw Ave., Jersey City, N. J.....            | 1902 |
| MAIN, FRANK H., 227 N. 18th St., Philadelphia, Pa.....               | 1913 |
| MAITLAND, ROBERT L., 141 Broadway, New York, N. Y.....               | 1889 |
| MANN, ELIAS P., Williamstown, Mass.....                              | 1912 |
| MAPLES, JAMES C., Port Chester, N. Y.....                            | 1913 |
| MARBLE, RICHARD M., Woodstock, Vt.....                               | 1907 |

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| MARKS, EDWARD SIDNEY, 655 Kearney Ave., Arlington, N. J.         | 1915 |
| MARRS, MRS. KINGSMILL, 9 Commonwealth Ave., Boston, Mass.        | 1903 |
| MARSHALL, ALFRED, 17 S. Jefferson St., Chicago, Ill.             | 1916 |
| MARSHALL, ELLA M. O., New Salem, Mass.                           | 1912 |
| MARTIN, Miss JANET, Milford, Conn.                               | 1916 |
| MARX, Capt. EDWARD J. F., 207 Burke St., Easton, Pa.             | 1907 |
| MATHEWS, F. SCHUYLER, 17 Frost St., Cambridge, Mass.             | 1917 |
| MATTERN, EDWIN S., 1042 Walnut St., Allentown, Pa.               | 1912 |
| MATTERN, WALTER I., 1042 Walnut St., Allentown, Pa.              | 1912 |
| MAY, Dr. JOHN B., Cohasset, Mass.                                | 1916 |
| MAYNARD, MRS. EDITH CLARK, Bryn Mawr, Pa.                        | 1916 |
| McCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.           | 1900 |
| McCONNELL, THOMAS S., 1813 Huey St., McKeesport, Pa.             | 1915 |
| McCOOK, Major PHILIP J., 571 Park Ave., New York, N. Y.          | 1895 |
| McGRAW, HARRY A., 1805 15th Ave., Altoona, Pa.                   | 1917 |
| McGREW, ALBERT D., 564 Stanton Ave., Pittsburgh, Pa.             | 1917 |
| McHATTON, T. H., 163 Mell St., Athens, Ga.                       | 1917 |
| McILHENNY, EDWARD AVERY, Avery Island, La.                       | 1894 |
| McINTIRE, MRS. HERBERT BRUCE, 4 Garden St., Cambridge, Mass.     | 1908 |
| McLAIN, ROBERT BAIRD, Market and 12th St., Wheeling, W. Va.      | 1893 |
| McLANE, JAMES LATIMER, Jr., Garrison, Md.                        | 1915 |
| McLEAN, Hon. GEO. P., 1520 New Hampshire Ave., Washington, D. C. | 1913 |
| McMAHON, WALT F., 1974 Broadway, New York, N. Y.                 | 1913 |
| McMILLAN, MRS. GILBERT N., Gorham, N. H.                         | 1902 |
| MEAD, MRS. E. M., 303 W. 84th St., New York, N. Y.               | 1904 |
| MEANS, CHAS. J., 29 Marlborough St., Boston, Mass.               | 1912 |
| MENGEL, G. HENRY, 739 Madison Ave., Reading, Pa.                 | 1913 |
| MERRIAM, HENRY F., R. F. D. 1, Newton, N. J.                     | 1905 |
| MERRILL, ALBERT R., Hamilton, Mass.                              | 1912 |
| MERRILL, D. E., State College, New Mexico.                       | 1913 |
| MERRILL, HARRY, 316 State St., Bangor, Maine.                    | 1883 |
| MERSON, W. B., Saginaw, Mich.                                    | 1905 |
| METCALF, F. P., Biological Survey, Washington, D. C.             | 1917 |
| METCALF, Z. P., A. & M. College, West Raleigh, N. C.             | 1913 |
| MEYER, Capt. G. RALPH, C. D. of Oahu, Ft. Kamehameha, Hawaii.    | 1913 |
| MEYER, Miss HELOISE, Lenox, Mass.                                | 1913 |
| MILES, MRS. HENRY A., Hingham, Mass.                             | 1917 |
| MILLER, Miss BERTHA STUART, Box 2, Palisade, N. J.               | 1915 |
| MILLER, CHAS. W., Jaffna College, Jaffna, Ceylon.                | 1909 |
| MILLER, MRS. ELISABETH C. T., 1010 Euclid Ave., Cleveland, Ohio. | 1916 |
| MILLS, ENOS A., Estes Park, Colo.                                | 1916 |
| MINER, LEO D., 1836 Vernon St., N. W. Washington, D. C.          | 1913 |
| MITCHELL, CATHERINE ADAMS, Riverside, Ill.                       | 1911 |
| MITCHELL, MASON, U. S. Consul, Apia, Samoa.                      | 1916 |
| MITCHELL, Dr. WALTON I., 603 Beacon Bldg., Wichita, Kan.         | 1893 |
| MOODY, HARRY LEE, Glyndon, Minn.                                 | 1916 |



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| MOORE, ELIZABETH PUTNAM, 5300 Media St., Philadelphia, Pa.....      | 1905 |
| MOORE, RAYMOND W., Kensington, Md.....                              | 1916 |
| MORCOM, G. FREAN, 243 N. Coronado St., Los Angeles, Cal.....        | 1886 |
| MORLEY, S. GRISWOLD, 2535 Etna St., Berkeley, Cal.....              | 1911 |
| MORRISON, ALVA, 53 Middle St., Braintree, Mass.....                 | 1915 |
| MORSE, HARRY GILMAN, Huron, Ohio.....                               | 1912 |
| MOSHER, FRANKLIN H., 17 Highland Ave., Melrose Highlands, Mass..... | 1905 |
| MOULTON, J. SIDNEY, Stow, Mass.....                                 | 1917 |
| MOUSLEY, WM. HENRY, Hatley, Quebec, Canada.....                     | 1915 |
| MUNRO, J. A., Okanagan Landing, British Columbia, Canada.....       | 1913 |
| MUNSON, Prof. WILLIAM H., 317 Franklin St., Winona, Minn.....       | 1915 |
| MURIE, O. J., 219 7th Ave. S, Moorhead, Minn.....                   | 1913 |
| MYERS, Mrs. HARRIET W., 311 N. Ave. 66, Los Angeles, Cal.....       | 1906 |
| MYERS, Miss LUCY F., 127 Academy St., Poughkeepsie, N. Y.....       | 1898 |
| NEWBERRY, WALTER C., Winnemucca, Nev.....                           | 1916 |
| NEWELL, Mrs. H. S., 2431 E. 5th St., Duluth, Minn.....              | 1912 |
| NICHOLS, L. NELSON, N. Y. Public Library, New York, N. Y.....       | 1917 |
| NIMS, Mrs. LUCIUS, 17 Union St., Greenfield, Mass.....              | 1913 |
| NOBLE, ELEANOR G., 66 Sparks St., Cambridge, Mass.....              | 1916 |
| NOBLE, G. KINGSLEY, Mus. Comp. Zoölogy, Cambridge, Mass.....        | 1916 |
| NOKES, Dr. I. D., 134 W. 55th St., Los Angeles, Cal.....            | 1915 |
| NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan.....       | 1903 |
| NORRIS, EDWARD, 301 W. Springfield Ave., Philadelphia, Pa.....      | 1916 |
| NORRIS, J. PARKER, Jr., 2122 Pine St., Philadelphia, Pa.....        | 1904 |
| NORRIS, ROY C., General Delivery, Portland, Ore.....                | 1904 |
| NOWELL, JOHN ROWLAND, 300 Parkwood Boulev., Schenectady, N. Y.....  | 1897 |
| OGDEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....     | 1897 |
| OLDYS, HENRY, Silver Springs, Md.....                               | 1896 |
| *OLIVER, Dr. HENRY KEMBLE, 4 Newbury St., Boston, Mass.....         | 1900 |
| ORDWAY, Miss ELIZABETH I., 20 Myrtle St., Winchester, Mass.....     | 1913 |
| OSBORN, ARTHUR A., 58 Washington St., Peabody, Mass.....            | 1912 |
| OTTEMILLER, FREE, 30 N. Pine St., York, Pa.....                     | 1914 |
| OVERTON, Dr. FRANK, Patchogue, N. Y.....                            | 1909 |
| *OWEN, Miss JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....    | 1897 |
| PACKARD, WINTHROP, 1442 Washington St., Canton, Mass.....           | 1917 |
| PAINE, AUGUSTUS G., Jr., 18 West 49th St., New York, N. Y.....      | 1886 |
| PAINE, CHARLES JACKSON, 705 Sears Bldg., Boston, Mass.....          | 1917 |
| PALMER, Dr. SAMUEL C., Swarthmore College, Swarthmore, Pa.....      | 1899 |
| PANGBURN, CLIFFORD H., 731 Elm St., New Haven, Conn.....            | 1907 |
| PARKER, EDWARD LUDLOW, 50 State St., Boston, Mass.....              | 1916 |
| PAUL, LUCIUS H., 1485 North St., Rochester, N. Y.....               | 1908 |
| PAXTON, Mrs. REGINA A., 4728 13th St. N. W., Washington, D. C.....  | 1917 |
| PEABODY, Rev. P. B., Independence, Ia.....                          | 1903 |
| PECK, MORTON E., 1458 Court St., Salem, Ore.....                    | 1909 |



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| PENARD, THOS. E., 16 Norfolk Road, Arlington, Mass.....               | 1912 |
| PENFIELD, Miss ANNIE L., 155 Charles St., Boston, Mass.....           | 1912 |
| PEPPER, Major WM., 1811 Spruce St., Philadelphia, Pa.....             | 1911 |
| PERINE, KEBLE, 26 Trull St., Boston, Mass.....                        | 1917 |
| PERKINS, Dr. ANNA E., So. Cal. State Hospital, Patton, Cal.....       | 1917 |
| PERKINS, ARTHUR W., 21 High St., Farmington, Me.....                  | 1915 |
| PERKINS, Dr. GEO. H., Univ. of Vt., Burlington, Vt.....               | 1912 |
| PERRY, Dr. HENRY JOSEPH, 1720 Beacon St., Boston, Mass.....           | 1909 |
| PETERS, ALBERT S., Lake Wilson, Minn.....                             | 1908 |
| PETERS, Lieut. JAMES LEE, Harvard, Mass.....                          | 1904 |
| PHELPS, FRANK M., 212 E. 4th St., Elyria, Ohio.....                   | 1912 |
| PHELPS, Mrs. J. W., Box 36, Northfield, Mass.....                     | 1899 |
| PHILIPP, PHILIP B., 220 Broadway, New York, N. Y.....                 | 1907 |
| PHILLIPS, ALEXANDER H., 54 Hodge Road, Princeton, N. J.....           | 1891 |
| PHILLIPS, CHAS. LINCOLN, 5 West Weir St., Taunton, Mass.....          | 1912 |
| PILSBURY, FRANK O., 1088 Main St., Walpole, Mass.....                 | 1917 |
| PINCHOT, GIFFORD, 1617 Rhode Island Ave., Washington, D. C.....       | 1910 |
| PLATT, Hon. EDMUND, Poughkeepsie, N. Y.....                           | 1917 |
| POE, Miss MARGARETTA, 1204 N. Charles St., Baltimore, Md.....         | 1899 |
| POOLE, EARL L., School Admin. Bldg., Reading, Pa.....                 | 1916 |
| PORTER, Miss E., 75 St. James St. E., San José, Cal.....              | 1917 |
| PORTER, LOUIS H., Stamford, Conn.....                                 | 1893 |
| POST, WILLIAM S., Bernardsville, N. J.....                            | 1911 |
| POTTER, JULIAN K., 563 Bailey St., Camden, N. J.....                  | 1912 |
| POWELL, Mrs. S. W., West Becket, Mass.....                            | 1917 |
| PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.....           | 1892 |
| PRATT, Hon. GEO. D., State Conservation Commission, Albany, N. Y..... | 1917 |
| PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.....                 | 1906 |
| PRICE, LIGON, R. F. D. 1, Dunmore, W. Va.....                         | 1913 |
| PROVO, W. F., Wickliffe, Ohio.....                                    | 1916 |
| PURDY, JAMES B., R. F. D. 4, Plymouth, Mich.....                      | 1893 |
| QUIGGLE, JAMES C., 1410 M St., N. W., Washington, D. C.....           | 1915 |
| RAMSDEN, CHAS. T., Box 146, Guantanamo, Cuba.....                     | 1912 |
| RAWSON, CHAS. I., Oxford, Mass.....                                   | 1917 |
| REA, PAUL M., Charleston Museum, Charleston, S. C.....                | 1912 |
| REAGH, Dr. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.....      | 1896 |
| REDFIELD, Miss ELISA W., 248 Newbury St., Boston, Mass.....           | 1897 |
| REGAR, H. SEVERN, 1400 De Kalb St., Norristown, Pa.....               | 1916 |
| REHN, JAMES A. G., 6033 B Catherine St., Philadelphia, Pa.....        | 1901 |
| REICHENBERGER, Mrs. VICTOR M., Hotel Essex, New York, N. Y.....       | 1916 |
| RETT, EGMONT Z., 3902 Pecos St., Denver, Colo.....                    | 1917 |
| RHOADS, CHARLES J., National Reserve Bank, Philadelphia, Pa.....      | 1895 |
| RICE, WARD J., Roachdale, Ind.....                                    | 1913 |
| RICHARDS, Miss HARRIET E., 36 Longwood Ave., Brookline, Mass.....     | 1900 |
| RICHARDSON, W. D., 4215 Prairie Ave., Chicago, Ill.....               | 1917 |
| RIDDLE, ROBERT, 21 W. Rogers Ave., Merchantville, N. J.....           | 1916 |

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| RIDDLE, S. EARL, Y. M. C. A., Chester, Pa.....                    | 1916 |
| RIDGWAY, JOHN L., Chevy Chase, Md.....                            | 1890 |
| RIKER, CLARENCE B., 43 Scotland Road, South Orange, N. J.....     | 1885 |
| ROBBEN, Miss NANCY P. H., 412 E. Merrimack St., Lowell, Mass....  | 1917 |
| ROBBINS, CHARLES A., Onset, Mass.....                             | 1914 |
| ROBBINS, ROYAL E., 61 Monmouth St., Brookline, Mass.....          | 1917 |
| ROBERTS, WILLIAM ELY, 207 McKinley Ave., Lansdowne, Pa.....       | 1902 |
| ROBERTSON, HOWARD, 157 S. Wilton Drive, Los Angeles, Cal.....     | 1911 |
| ROBINSON, ANTHONY W., Haverford, Pa.....                          | 1903 |
| *ROGERS, CHARLES H., Amer. Mus. Nat. Hist., New York, N. Y....    | 1904 |
| ROLAND, CONRAD K., 1208 De Kalb St., Norristown, Pa.....          | 1917 |
| ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.....                  | 1896 |
| ROSS, GEORGE H., 23 West St., Rutland, Vt.....                    | 1904 |
| ROSS, Dr. LUCRETIIUS H., 507 Main St., Bennington, Vt.....        | 1912 |
| ROWLEY, JOHN, 42 Plaza Drive, Berkeley, Cal.....                  | 1889 |
| SACKETT, CLARENCE, Rye, N. Y.....                                 | 1910 |
| SAGE, HENRY M., Menands Road, Albany, N. Y.....                   | 1885 |
| SANBORN, COLIN C., Box 50, Evanston, Ill.....                     | 1911 |
| SAUNDERS, ARETAS A., 143 East Ave., Norwalk, Conn.....            | 1907 |
| SAVAGE, L. F., 1210 Jenny Lind St., McKeesport, Pa.....           | 1917 |
| SAWYER, EDMUND J., Box 123, Watertown, N. Y.....                  | 1915 |
| SCHAEFER, OSCAR FREDERICK, 66 Genesee St., Rochester, N. Y....    | 1916 |
| SCHENCK, FREDERIC, 8 Gloucester St., Boston, Mass.....            | 1912 |
| SCHORGER, A. W., 2021 Kendall Ave., Madison, Wis.....             | 1913 |
| SCOVILLE, SAMUEL, JR., 1308 Pennsylvania Bldg., Philadelphia, Pa. | 1916 |
| SCUDDER, BRADFORD A., 457 W. 164th St., New York, N. Y.....       | 1917 |
| SEARS, WILLIAM R., 73 Tremont St., Boston, Mass.....              | 1916 |
| SERRILL, WILLIAM J., Haverford, Pa.....                           | 1916 |
| SHARPLES, ROBERT P., West Chester, Pa.....                        | 1907 |
| SHAW, HENRY S., 78 Cypress St., Newton Centre, Mass.....          | 1916 |
| SHAW, WILLIAM T., 900 Campus Ave., Pullman, Wash.....             | 1908 |
| SHEA, DANIEL W., Catholic Univ. of Amer., Washington, D. C....    | 1917 |
| SHEARER, Dr. AMON R., Mont Belvieu, Tex.....                      | 1905 |
| SHELDON, CHARLES, Woodstock, Vt.....                              | 1911 |
| SHELTON, ALFRED, Univ. of Oregon, Eugene, Ore.....                | 1911 |
| SHERMAN, HARLEY B., 620 Church St., Ann Arbor, Mich.....          | 1916 |
| SHIRLEY, GARLAND L., Dayton, Va.....                              | 1916 |
| SHOEMAKER, CLARENCE R., 3116 P St., Washington, D. C.....         | 1910 |
| SHOEMAKER, HENRY, 71 Broadway, New York, N. Y.....                | 1912 |
| SHOFFNER, CHARLES P., 1345 Arch St., Philadelphia, Pa.....        | 1915 |
| SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.....             | 1899 |
| SILLIMAN, O. P., Salinas, Cal.....                                | 1915 |
| SILSBEE, THOMAS, 115 Marlborough St., Boston, Mass.....           | 1916 |
| SIMMONS, GEO. FINLAY, Rice Institute, Houston, Texas.....         | 1910 |

\* Life Associate.

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| SKINNER, M. P., Yellowstone Park, Wyoming.....   | 1916 |
| SMITH, AUSTIN PAUL, 2102 E. 83d St., Cleveland, Ohio.....                              | 1911 |
| SMITH, Rev. FRANCIS CURTIS, 812 Columbia St., Utica, N. Y.....                         | 1903 |
| SMITH, Prof. FRANK, 913 West California Ave., Urbana, Ill.....                         | 1909 |
| SMITH, HORACE G., State Museum, State House, Denver, Colo.....                         | 1888 |
| SMITH, LESTER W., 60 Cottage St., Meriden, Conn.....                                   | 1916 |
| SMITH, LOUIS IRVIN, Jr., 3908 Chestnut St., Philadelphia, Pa.....                      | 1901 |
| SMITH, NAPIER, 46 Côtés des Neiges Road, Montreal, Canada.....                         | 1915 |
| SMITH, Mrs. WALLIS C., 525 N. Michigan Ave., Saginaw, W. S., Mich.....                 | 1916 |
| SMYTH, Prof. ELLISON A., Jr., Polytechnic Inst., Blacksburg, Va.....                   | 1892 |
| SNYDER, WILL EDWIN, 309 De Clark St., Beaver Dam, Wis.....                             | 1895 |
| SOULE, CAROLINE GRAY, 187 Walnut St., Brookline, Mass.....                             | 1917 |
| SPELMAN, HENRY M., 48 Brewster St., Cambridge, Mass.....                               | 1911 |
| SPENCER, Miss CLEMENTINA S., Dept. of Zoölogy, Coe College, Cedar<br>Rapids, Iowa..... | 1917 |
| SQUIER, THEO. L., 149 Freemont St., Battle Creek, Mich.....                            | 1915 |
| STANWOOD, Miss CORDELIA JOHNSON, Ellsworth, Me.....                                    | 1909 |
| STAPLETON, RICHARD, 219 High St., Holyoke, Mass.....                                   | 1916 |
| STEELE, HENRY B., 4530 Drexel Boulevard, Chicago, Ill.....                             | 1917 |
| STEPHENS, T. C., Morningside College, Sioux City, Iowa.....                            | 1909 |
| STEVENS, Dr. J. F., Box 1546, Lincoln, Neb.....  | 1908 |
| STEWART, Mrs. CECIL, 451 Beacon St., Boston, Mass.....                                 | 1917 |
| STEWART, PHILLIP B., 1228 Wood Ave., Colorado Springs, Colo.....                       | 1915 |
| STILES, EDGAR C., 345 Main St., West Haven, Conn.....                                  | 1907 |
| STODDARD, HERBERT LEE, Field Museum Nat. Hist., Chicago, Ill.....                      | 1912 |
| STORER, TRACY IRVIN, Mus. Vert. Zoölogy, Berkeley, Cal.....                            | 1916 |
| STRAW, Mrs. HERMAN F., 607 Chestnut St., Manchester, N. H.....                         | 1916 |
| STREET, J. FLETCHER, Beverly, N. J.....  | 1908 |
| STUART, FRANK A., 118 Green St., Marshall, Mich.....                                   | 1915 |
| STUART, GEO. H., 3rd, 923 Clinton St., Philadelphia, Pa.....                           | 1913 |
| STURGIS, S. WARREN, Groton, Mass.....  | 1910 |
| STURTEVANT, EDWARD, St. George's School, Newport, R. I.....                            | 1896 |
| SUGDEN, ARTHUR W., 52 Highland St., Hartford, Conn.....                                | 1913 |
| SWAIN, JOHN MERTON, Box 528, Farmington, Me.....                                       | 1899 |
| SWEENEY, J. A., Forest Service, Halsey, Neb.....                                       | 1916 |
| SWENK, MYRON H., 3028 Starr St., Lincoln, Neb.....                                     | 1904 |
| TATNALL, SAMUEL A., 503 Hansberry St., Philadelphia, Pa.....                           | 1916 |
| TAYLOR, ALEXANDER R., 1410 Washington St., Columbia, S. C.....                         | 1907 |
| TAYLOR, HORACE, 93 Binney St., Roxbury, Mass.....                                      | 1917 |
| TAYLOR, LIONEL E., Bankhead, Kelowna, B. C.....  | 1913 |
| TAYLOR, Dr. WALTER P., 1428 Perry Place, N. W., Washington, D. C.....                  | 1916 |
| TAYLOR, WARNER, 419 Sterling Court, Madison, Wis.....                                  | 1916 |
| TERRILL, LEWIS McI., 44 Stanley Ave., St. Lambert, Quebec.....                         | 1907 |
| THOMAS, Miss EMILY HINDS, Bryn Mawr, Pa.....   | 1901 |
| THOMPSON, J. WALCOTT, 527 East First South St., Salt Lake City,<br>Utah.....           | 1916 |

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|---|------|
| THORNE, GERALD, 334 N. 5 E. St., Logan, Utah.....                     | 1917 |
| THORNS, Miss JULIA A., Asheboro, N. C.....                            | 1916 |
| TINKER, ALMERIN D., 631 S. 12th St., Ann Arbor, Mich.....             | 1907 |
| TOWER, Mrs. KATE DENIG, 9 Newbury St., Boston, Mass.....              | 1908 |
| TOWNSHEND, HENRY HOTCHKISS, 69 Church St., New Haven, Conn.....       | 1915 |
| TREGANZA, A. O., 614 E. South St., Salt Lake City, Utah.....          | 1906 |
| TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.....        | 1899 |
| TRULL, HARRY S., 317 East 196th St., New York, N. Y.....              | 1917 |
| TRUMBELL, J. H., Plainville, Conn.....                                | 1907 |
| TUDBURY, WARREN C., 9 Oxford St., Chevy Chase, Md.....                | 1903 |
| TWEEDY, EDGAR, 27 Fairview Ave., Danbury, Conn.....                   | 1902 |
| TYLER, JOHN G., 219 Glenn Ave., Fresno, Cal.....                      | 1912 |
| UNDERWOOD, WM. LYMAN, Mass. Inst. of Tech., Cambridge, Mass.....      | 1900 |
| VALENTINE, Miss ANNA J., Bellefonte, Pa.....                          | 1905 |
| VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....              | 1885 |
| VAN NAME, WILLARD G., Am. Mus. Nat. History, New York, N. Y.....      | 1900 |
| VETTER, Dr. CHARLES, 2 West 88th St., New York, N. Y.....             | 1898 |
| VIREECK, HENRY L., Biological Survey, Washington, D. C.....           | 1916 |
| VIETOR, Mrs. EDWARD W., 166 St. James Place, Brooklyn, N. Y.....      | 1914 |
| VISHER, Dr. STEPHEN S., State Normal, Moorhead, Minn.....             | 1904 |
| WADSWORTH, CLARENCE S., 27 Washington St., Middletown, Conn.....      | 1906 |
| WALKER, GEO. R., R. D. 3, Murray, Utah.....                           | 1909 |
| WALLACE, CHAS. R., 69 Columbus Ave., Delaware, Ohio.....              | 1913 |
| WALLACE, JAMES S., 12 Wellington St., E., Toronto, Ontario.....       | 1907 |
| WALTER, Dr. HERBERT E., 67 Oriole Ave., Providence, R. I.....         | 1901 |
| WALTERS, FRANK, 125 23rd St., Elmhurst, N. Y.....                     | 1902 |
| WARBURTON, STANTON, Jr., 1221 N. Fife St., Tacoma, Wash.....          | 1917 |
| WARD, FRANK H., 18 Grove Place, Rochester, N. Y.....                  | 1908 |
| WARD, HENRY L., 520 Lake Drive, Milwaukee, Wis.....                   | 1906 |
| WARD, ROY A., Biological Survey, Washington, D. C.....                | 1915 |
| WARNER, EDWARD P., Mass. Inst. of Technology, Cambridge, Mass.....    | 1910 |
| WATSON, Mrs. ALEX M., 124 Hatton St., Portsmouth, Va.....             | 1910 |
| WATSON, JAMES D., 6042 Harper Ave., Chicago, Ill.....                 | 1917 |
| WEBER, J. A., Palisades Park, N. J.....                               | 1907 |
| WEBSTER, Dr. GEORGE A., 419 Boylston St., Boston, Mass.....           | 1916 |
| WEBSTER, Mrs. JENNIE E. B., 44 East 23rd St., New York, N. Y.....     | 1917 |
| WEISEMAN, T. WALTER, 226 Beaver Road, Emsworth, Pa.....               | 1916 |
| WEISER, CHARLES S., 105 W. Springettsbury Ave., York, Pa.....         | 1916 |
| WELLMAN, GORDON B., 54 W. Beltran St., Malden, Mass.....              | 1908 |
| WETMORE, Mrs. EDMUND H., 125 E. 57th St., New York, N. Y.....         | 1902 |
| WEYGANDT, Dr. CORNELIUS, 6635 Wissahickon Ave., Philadelphia, Pa..... | 1907 |
| WHALER, Mrs. J. W., 14 Murry Place, Princeton, N. J.....              | 1916 |
| WHARTON, WILLIAM P., Groton, Mass.....                                | 1907 |
| WHEELER, JOHN B., East Templeton, Mass.....                           | 1917 |
| WHITE, FRANCIS BEACH, St. Paul's School, Concord, N. H.....           | 1891 |
| WHITE, GEORGE R., Dead Letter Office, Ottawa, Canada.....             | 1903 |



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|---|------|
| WHITE, W. A., 14 Wall St., New York, N. Y.....                      | 1902 |
| WHITTLE, CHARLES L., 20 Langdon St., Cambridge, Mass.....           | 1916 |
| WIEGMANN, Dr. WILLIAM HENRY, 436 East 5th St., New York, N. Y....   | 1916 |
| WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.....           | 1895 |
| WILCOX, T. FERDINAND, 118 E. 54th St., New York, N. Y.....          | 1895 |
| WILEY, LEO, Palo Verde, Cal.....                                    | 1917 |
| WILLARD, BERTEL G., 1619 Massachusetts Ave., Cambridge, Mass..      | 1906 |
| WILLARD, FRANK C., Farmingdale, N. Y.....                           | 1909 |
| WILLCOX, Prof. M. A., 63 Oakwood Road, Newtonville, Mass.....       | 1913 |
| WILLIAMS, Miss BELLE, Colonia Hotel, Columbia, S. C.....            | 1915 |
| WILLIAMS, ROBERT S., N. Y. Botanical Gardens, New York, N. Y....    | 1888 |
| WILLIAMS, ROBERT W., U. S. Dept. Agric., Washington, D. C.....      | 1900 |
| WILLIAMSON, E. B., Bluffton, Ind.....                               | 1900 |
| WILLIS, Miss CLARA L., 91 Wyman St., Waban, Mass.....               | 1915 |
| WILLISTON, Mrs. SAMUEL, 577 Belmont St., Belmont, Mass.....         | 1911 |
| WILMOT, NELSON E., 24 New St., West Haven, Conn.....                | 1916 |
| WILSON, Mrs. E. S., 2 Clarendon Ave., Detroit, Mich.....            | 1917 |
| WING, DeWITT C., 5344 Dorchester Ave., Chicago, Ill.....            | 1913 |
| WINSLOW, ARTHUR M., Jackson, Mich.....                              | 1912 |
| WISE, Miss HELEN D., 1514 13th St., N. W., Washington, D. C....     | 1916 |
| WITTER, Mrs. HENRY M., 12 Montague St., Worcester, Mass.....        | 1916 |
| WOLFE, PATRICK R., 1129 Tinton Ave., New York, N. Y.....            | 1917 |
| WOOD, Dr. CASEY A., 7 W. Madison St., Chicago, Ill.....             | 1917 |
| WOOD, GEORGE B., 129 S. 18th St., Philadelphia, Pa.....             | 1916 |
| WOOD, Mrs. N. P., Northfield, Mass.....                             | 1917 |
| WOOD, NELSON R., Smithsonian Institution, Washington, D. C....      | 1895 |
| WOODRUFF, FRANK M., Acad. of Sciences, Lincoln Park, Chicago, Ill.  | 1894 |
| WOODRUFF, LEWIS B., 14 E. 68th St., New York, N. Y.....             | 1886 |
| WOODWARD, Dr. LEMUEL, 52 Pearl St., Worcester, Mass.....            | 1917 |
| WORCESTER, Mrs. ALFRED J., 314 Bacon St., Waltham, Mass.....        | 1908 |
| WRIGHT, ALBERT H., Cayuga Heights, Ithaca, N. Y.....                | 1906 |
| WRIGHT, FRANK S., 14 Cayuga St., Auburn, N. Y.....                  | 1917 |
| WRIGHT, Miss HARRIET H., 1637 Gratiot Ave., Saginaw, W. S., Mich.   | 1907 |
| WRIGHT, HORACE WINSLOW, 107 Pinckney St., Boston, Mass.....         | 1902 |
| WYMAN, LUTHER E., 3927 Wisconsin St., Los Angeles, Cal.....         | 1907 |
| YOUNG, JOHN P., 1510 5th Ave., Youngstown, Ohio.....                | 1911 |
| ZIMMER, J. T., Dept. of Agriculture, Port Moresby, British Papua... | 1908 |



## DECEASED MEMBERS.

## FELLOWS.

|  | <i>Date of Death</i> |
|--|----------------------|
| ALDRICH, CHARLES.....                    | March 8, 1908        |
| BAIRD, SPENCER FULLERTON.....            | Aug. 19, 1887        |
| BEAL, FOSTER ELLENBOROUGH LASCELLES..... | Oct. 1, 1916         |
| BENDIRE, CHARLES EMIL.....               | Feb. 4, 1897         |
| COOKE, WELLS WOODBRIDGE.....             | March 30, 1916       |
| COUES, ELLIOTT*.....                     | Dec. 25, 1899        |
| ELLIOT, DANIEL GIRAUD*.....              | Dec. 22, 1915        |
| GOSS, NATHANIEL STICKNEY.....            | March 10, 1891       |
| HOLDER, JOSEPH BASSETT.....              | Feb. 28, 1888        |
| JEFFRIES, JOHN AMORY.....                | March 26, 1892       |
| MCILWRAITH, THOMAS.....                  | Jan. 31, 1903        |
| MEARNS, EDGAR ALEXANDER.....             | Nov. 1, 1916         |
| MERRILL, JAMES CUSHING.....              | Oct. 27, 1902        |
| PURDIE, HENRY AUGUSTUS.....              | March 29, 1911       |
| SENNETT, GEORGE BURRITT.....             | March 18, 1900       |
| TRUMBULL, GURDON.....                    | Dec. 28, 1903        |
| WHEATON, JOHN MAYNARD.....               | Jan. 28, 1887        |

## RETIRED FELLOWS.

|                              |                |
|------------------------------|----------------|
| BELDING, LYMAN.....          | Nov. 22, 1917  |
| GILL, THEODORE NICHOLAS..... | Sept. 25, 1914 |

## HONORARY FELLOWS.

|                                      |                |
|--------------------------------------|----------------|
| BLANFORD, WILLIAM THOMAS.....        | June 23, 1905  |
| BARBOZA DU BOCAGE, JOSÉ VICENTE..... | July —, 1908   |
| BERLEPSCH, HANS VON.....             | Feb. 27, 1915  |
| BURMEISTER, KARL HERMANN KONRAD..... | May 1, 1891    |
| CABANIS, JEAN LOUIS.....             | Feb. 20, 1906  |
| DRESSER, HENRY EELES.....            | Nov. 28, 1915  |
| GÄTKE, HEINRICH.....                 | Jan. 1, 1897   |
| GIGLIOLI, ENRICO HILLYER.....        | Dec. 16, 1909  |
| GUNDLACH, JOHANNES CHRISTOPHER.....  | March 17, 1896 |
| GURNEY, JOHN HENRY.....              | April 20, 1890 |
| HARTLAUB, [KARL JOHANN] GUSTAV.....  | Nov. 20, 1900  |

\* Presidents of A. O. U.

|                                      |                |
|--------------------------------------|----------------|
| HARVIE-BROWN, JOHN Alexander         | July 26, 1916  |
| HUME, ALLAN OCTAVIAN                 | July 31, 1912  |
| HUXLEY, THOMAS HENRY                 | June 29, 1895  |
| KRAUS, FERDINAND                     | Sept. 15, 1890 |
| LAWRENCE, GEORGE NEWBOLD             | Jan. 17, 1895  |
| MEYER, ADOLF BERNHARD                | Feb. 5, 1911   |
| MILNE-EDWARDS, ALPHONSE              | April 21, 1900 |
| NEWTON, ALFRED                       | June 7, 1907   |
| PARKER, WILLIAM KITCHEN              | July 3, 1890   |
| PELZELN, AUGUST VON                  | Sept. 2, 1891  |
| SALVIN, OSBERT                       | June 1, 1898   |
| SAUNDERS, HOWARD                     | Oct. 20, 1907  |
| SCHLEGEL, HERMANN                    | Jan. 17, 1884  |
| SCLATER, PHILIP LUTLEY               | June 27, 1913  |
| SEEBOHM, HENRY                       | Nov. 26, 1895  |
| SHARPE, RICHARD BOWDLER              | Dec. 25, 1909  |
| TACZANOWSKI, LADISLAS [CASIMIROVICH] | Jan. 17, 1890  |
| WALLACE, ALFRED RUSSELL              | Nov. 7, 1913   |

## CORRESPONDING FELLOWS.

|                                  |                |
|----------------------------------|----------------|
| ALTUM, JOHANN BERNARD THEODOR    | Feb. 1, 1900   |
| ANDERSON, JOHN                   | Aug. 15, 1900  |
| BALDAMUS, AUGUSTE KARL EDUARD    | Oct. 30, 1893  |
| BLAKISTON, THOMAS WRIGHT         | Oct. 15, 1891  |
| BLASIUS, [PAUL HEINRICH] RUDOLPH | Sept. 21, 1907 |
| BLASIUS, WILHELM AUGUST HEINRICH | May 31, 1912   |
| BOGDANOW, MODEST NIKOLAEVICH     | March 16, 1888 |
| BROOKS, WILLIAM EDWIN            | Jan. 18, 1899  |
| BRYANT, WALTER [PIERC]E          | May 21, 1905   |
| BULLER, WALTER LAWRY             | July 19, 1906  |
| BUTLER, EDWARD ARTHUR            | April 16, 1916 |
| COLLETT, ROBERT                  | Jan. 27, 1913  |
| COOPER, JAMES GRAHAM             | July 19, 1902  |
| CORDEAUX, JOHN                   | Aug. 1, 1899   |
| DAVID, ARMAND                    | Nov. 10, 1900  |
| DUGÈS, ALFRED                    | Jan. 7, 1910   |
| FATIO, VICTOR                    | March 19, 1906 |
| GIRTANNER, GEORG ALBERT          | June 4, 1907   |
| GOELDI, EMIL AUGUST              | July 5, 1917   |
| HAAST, JOHANN FRANZ JULIUS VON   | Aug. 16, 1887  |
| HARGITT, EDWARD                  | March 19, 1895 |
| HAYEK, GUSTAV EDLER VON          | Jan. 9, 1911   |
| HERMAN, OTTO                     | Dec. 27, 1914  |

# *Deceased Members.*

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|  |                |
|--|----------------|
| HOLUB, EMIL.....   | Feb. 21, 1902  |
| HOMEYER, EUGEN FERDINAND VON.....                        | May 31, 1889   |
| KNUDSEN, VALDEMAR.....                                   | Jan. 8, 1898   |
| KRUKENBERG, CARL FRIEDRICH WILHELM.....                  | Feb. 18, 1889  |
| LAYARD, EDGAR LEOPOLD.....                               | Jan. 1, 1900   |
| LEVERKÜHN, PAUL.....                                     | Dec. 5, 1905   |
| LILFORD, LORD (THOMAS LITTLETON POWYS).....              | June 17, 1896  |
| MALMGREN, ANDERS JOHAN.....                              | April 12, 1897 |
| MARSHALL, AUGUST FRIEDRICH.....                          | Oct. 11, 1887  |
| MIDDENDORFF, ALEXANDER THEODOROVICH.....                 | Jan. 28, 1894  |
| MOSJISOVICS VON MOJSVAR, FELIX GEORG HERMANN AUGUST..... | Aug. 27, 1897  |
| NORTH, ALFRED JOHN.....                                  | May 6, 1917    |
| OATES, EUGENE WILLIAM.....                               | Nov. 16, 1911  |
| OUSTALET, (JEAN FRÉDÉRIC) ÉMILE.....                     | Oct. 23, 1905  |
| PHILIPPI, RUDOLF AMANDUS.....                            | July 23, 1904  |
| PRJEVALSKY, NICOLAS MICHAELOVICH.....                    | Nov. 1, 1888   |
| PRENTISS, DANIEL WEBSTER.....                            | Nov. 19, 1899  |
| PRYER, HARRY JAMES STOVIN.....                           | Feb. 17, 1888  |
| RADDE, GUSTAV FERDINAND RICHARD VON.....                 | March 15, 1903 |
| RAMSAY, EDWARD PIERSON.....                              | Dec. 16, 1916  |
| SCHRENCK, LEOPOLD VON.....                               | Jan. 20, 1894  |
| SÉLYS-LONGCHAMPS, MICHEL EDMOND DE.....                  | Dec. 11, 1900  |
| SEVERTZOW, NICOLAS ALEKSYEVICH.....                      | Feb. 8, 1885   |
| SHELLEY, GEORGE ERNEST.....                              | Nov. 29, 1910  |
| STEVENSON, HENRY.....                                    | Aug. 18, 1888  |
| TRISTRAM, HENRY BAKER.....                               | March 8, 1906  |
| WHARTON, HENRY THORNTON.....                             | Sept. —, 1895  |
| WOODHOUSE, SAMUEL WASHINGTON.....                        | Oct. 23, 1904  |

# MEMBERS.

|  |               |
|--|---------------|
| BAGG, EGBERT.....                        | July 12, 1915 |
| BROWN, HERBERT.....                      | May 12, 1913  |
| CAMERON, EWEN SOMERLED.....              | May 25, 1915  |
| FANNIN, JOHN.....                        | June 20, 1904 |
| HARDY, MANLY.....                        | Dec. 9, 1910  |
| JUDD, SYLVESTER DWIGHT.....              | Oct. 22, 1905 |
| KNIGHT, ORA WILLIS.....                  | Nov. 11, 1913 |
| PENNOCK, CHARLES JOHN (disappeared)..... | May 15, 1913  |
| RALPH, WILLIAM LEGRANGE.....             | July 8, 1907  |
| TORREY, BRADFORD.....                    | Oct. 7, 1912  |
| WHITMAN, CHARLES OTIS.....               | Dec. 6, 1910  |

## ASSOCIATES.

|   |                |
|---|----------------|
| ADAMS, CHARLES FRANCIS.....   | May 20, 1893   |
| ALLEN, CHARLES SLOVER.....  | Oct. 15, 1893  |
| ANTES, FRANK TALLANT.....   | Feb. 6, 1907   |
| ATKINS, HARMON ALBRO.....   | May 19, 1885   |
| AVERY, WILLIAM CUSHMAN.....   | March 11, 1894 |
| BAILEY, BERT HEALD.....   | June 22, 1917  |
| BAILEY, CHARLES E.....  | —, 1905        |
| BAIRD, LUCY HUNTER.....   | June 19, 1913  |
| BANKS, MISS MARTHA BURR.....  | Dec. 13, 1917  |
| BARLOW, CHESTER.....  | Nov. 6, 1902   |
| BATTEN, GEORGE.....   | Feb. 16, 1918  |
| BAUR, GEORG [HERMANN CARL LUDWIG].....                                  | June 25, 1898  |
| BECKHAM CHARLES WICKLIFFE.....  | June 8, 1888   |
| BERIER, DELAGNEL.....   | Feb. 11, 1916  |
| BETTS, NORMAN DEWITT.....   | May 21, 1917   |
| BILL, CHARLES.....  | April 14, 1897 |
| BIRTWELL, FRANCIS JOSEPH.....   | June 28, 1901  |
| BOARDMAN, GEORGE AUGUSTUS.....  | Jan. 11, 1901  |
| BODINE, DONALDSON.....  | Aug. 26, 1915  |
| BOLLES, FRANK.....  | Jan. 10, 1894  |
| BRACKETT, FOSTER HODGES.....  | Jan. 5, 1900   |
| BRANTLEY, WILLIAM FOREACRE.....   | Sept. 9, 1914  |
| BREESE, WILLIAM LAWRENCE.....   | Dec. 7, 1888   |
| BRENINGER, GEORGE FRANK.....  | Dec. 3, 1905   |
| BRENNAN, CHARLES F.....   | Mar. 21, 1907  |
| BROKAW, LOUIS WESTEN.....   | Sept. 3, 1897  |
| BROWN, JOHN CLIFFORD.....   | Jan. 16, 1901  |
| BROWNE, FRANCIS CHARLES.....  | Jan. 9, 1900   |
| BROWNSON, WILLIAM HENRY.....  | Sept. 6, 1909  |
| BURKE, WILLIAM BARDWELL.....  | April 15, 1914 |
| BURNETT, LEONARD ELMER.....   | March 16, 1904 |
| BUTLER [THOMAS] JEFFERSON.....  | Oct. 23, 1913  |
| BUXBAUM, MRS. CLARA E.....  | March 23, 1914 |
| CAIRNS, JOHN SIMPSON.....   | June 10, 1895  |
| CALL, AUBREY BRENDON.....   | Nov. 20, 1901  |
| CAMPBELL, ROBERT ARGYLL.....  | April —, 1897  |
| CANFIELD, JOSEPH BUCKINGHAM.....  | Feb. 18, 1904  |
| CARLETON, CYRUS.....  | Nov. 15, 1907  |
| CARTER, EDWIN.....  | Feb. 3, 1900   |
| CARTER, ISABEL MONTIETH PADDOCK (MRS. EDGAR N. CARTER)                  | Sept. 15, 1907 |
| CHADBOURNE, ETHEL RICHARDSON (MRS. ARTHUR PATTERSON<br>CHADBOURNE)..... | Oct. 4, 1908   |

*Deceased Members.*

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|   |                |
|---|----------------|
| CHARLES, FRED LEMAR.....                              | May 6, 1911    |
| CLARK, JOHN NATHANIEL.....                            | Jan. 13, 1903  |
| COE, WILLIAM WELLINGTON.....                          | April 26, 1885 |
| COLBURN, WILLIAM WALLACE.....                         | Oct. 17, 1899  |
| COLLETT, [COLLETTE] ALONZO MCGEE.....                 | Aug. 22, 1902  |
| CONANT, MARTHA WILSON (Mrs. THOMAS OAKES CONANT)..... | Dec. 28, 1907  |
| CONKLIN, CHARLES EDGAR.....                           | Sept. 8, 1916  |
| CORNING, ERASTUS JR.....                              | April 8, 1893  |
| DAFFIN, WILLIAM H.....                                | April 21, 1902 |
| DAKIN, JOHN ALLEN.....                                | Feb. 21, 1900  |
| DAVIS, SUSAN LOUISE (Mrs. WALTER ROCKWOOD DAVIS)..... | Feb. 13, 1913  |
| DAVIS, WALTER ROCKWOOD.....                           | April 3, 1907  |
| DEXTER, [SIMON] NEWTON.....                           | July 27, 1901  |
| DODGE, JULIAN MONTGOMERY.....                         | Nov. 23, 1909  |
| DUNLOP, ERIC BROOKE.....                              | May 19, 1917   |
| DYCHE, LEWIS LINDSAY.....                             | Jan. 20, 1915  |
| ELLIOTT, SAMUEL LOWELL.....                           | Feb. 11, 1889  |
| FAIRBANKS, FRANKLIN.....                              | April 24, 1895 |
| FARWELL, Mrs. ELLEN SHELDON DRUMMOND.....             | Aug. 6, 1912   |
| FERRY, JOHN FARWELL.....                              | Feb. 11, 1910  |
| FERRY, MARY BISSELL.....                              | March 18, 1915 |
| FISHER, WILLIAM HUBBELL.....                          | Oct. 6, 1909   |
| FOWLER, JOSHUA LOUNSBURY.....                         | July 11, 1899  |
| FULLER, CHARLES ANTHONY.....                          | March 16, 1906 |
| FULLER, TIMOTHY OTIS.....                             | Aug. 17, 1916  |
| GESNER, ABRAHAM HERBERT.....                          | April 30, 1895 |
| GOSS, BENJAMIN FRANKLIN.....                          | July 6, 1893   |
| GRONBERGER, SVEN MAGNUS.....                          | April 24, 1916 |
| HALES, HENRY TEASDEL.....                             | Nov. 6, 1913   |
| HATCH, JESSE MAURICE.....                             | May 1, 1898    |
| HAZARD, ROWLAND GIBSON.....                           | Jan. 23, 1918  |
| HILL, WILLIAM HENRY.....                              | Oct. 14, 1913  |
| HINE, Mrs. JANE LOUISA.....                           | Feb. 11, 1916  |
| HITCHCOCK, Mrs. ELEANOR BECKWITH.....                 | March 3, 1917  |
| HOADLEY, FREDERICK HODGES.....                        | Feb. 26, 1895  |
| HOLMES, LARUE KLINGLE.....                            | May 10, 1906   |
| HOOPES, JOSIAH.....                                   | Jan. 16, 1904  |
| HOWE, FLORENCE AURELLA.....                           | July 9, 1913   |
| HOWE, LOUISE.....                                     | Sept. 13, 1912 |
| HOWLAND, JOHN SNOWDEN.....                            | Sept. 19, 1885 |
| INGALLS, CHARLES EDWARD.....                          | May 31, 1917   |
| INGERSOLL, JOSEPH CARLETON.....                       | Oct. 1, 1897   |
| JENKS, JOHN WHIPPLE POTTER.....                       | Sept. 26, 1894 |
| JEWEL, LINDSEY LOUIN.....                             | Sept. 5, 1915  |
| JOUY, PIERRE LOUIS.....                               | March 22, 1894 |
| JUSTICE, HENRY.....                                   | March 1, 1918  |



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| KELKER, WILLIAM ANTHONY.....                     | Feb. 15, 1908  |
| KNIGHT, WILBER CLINTON.....                      | July 28, 1903  |
| KNOX, JOHN COWING.....                           | June 10, 1904  |
| KOCH, AUGUST.....                                | Feb. 15, 1907  |
| KUMLIEN, LUDWIG.....                             | Dec. 4, 1902   |
| KUMLIEN, THURE LUDWIG THEODOR.....               | Aug. 5, 1888   |
| LAKE, LESLIE WALDO.....                          | Feb. 7, 1916   |
| LATIMER, CAROLINE P.....                         | April 19, 1916 |
| LAWRENCE, ROBERT HOE.....                        | April 27, 1897 |
| LEE, LESLIE ALEXANDER.....                       | May 20, 1908   |
| LEVEY, WILLIAM CHARLESWORTH.....                 | July 5, 1914   |
| LINDEN, CHARLES.....                             | Feb. 3, 1888   |
| LLOYD, ANDREW JAMES.....                         | June 14, 1906  |
| LORD, WILLIAM ROGERS.....                        | Feb. 2, 1916   |
| MABBETT, GIDEON.....                             | Aug. 15, 1890  |
| MAITLAND, ALEXANDER.....                         | Oct. 25, 1907  |
| MARBLE, CHARLES CHURCHILL.....                   | Sept. 10, 1900 |
| MARCY, OLIVER.....                               | March 19, 1899 |
| MARIS, WILLARD LORRAINE.....                     | Dec. 11, 1895  |
| MARSDEN, HENRY WARDEN.....                       | Feb. 26, 1914  |
| McEWEN, DANIEL CHURCH.....                       | Nov. 1, 1909   |
| McHATTON, HENRY.....                             | April 22, 1917 |
| McKINLAY, JAMES.....                             | Nov. 30, 1899  |
| MEAD, GEORGE SMITH.....                          | June 18, 1901  |
| MINOT, HENRY DAVIS.....                          | Nov. 13, 1890  |
| MORRELL, CLARENCE HENRY.....                     | July 15, 1902  |
| NICHOLS, HOWARD GARDNER.....                     | June 23, 1896  |
| NIMS, LEE.....                                   | March 12, 1903 |
| NORTHROP, JOHN ISAIAH.....                       | June 26, 1891  |
| PARK, AUSTIN FORD.....                           | Sept. 22, 1893 |
| PAULMIER, FREDERICK CLARK.....                   | March 4, 1906  |
| POMEROY, GRACE VIRGINIA.....                     | May 14, 1906   |
| POMEROY, HARRY KIRKLAND.....                     | Jan. 27, 1915  |
| PUTNAM, FREDERIC WARD.....                       | Aug. 14, 1915  |
| RAGSDALE, GEORGE HENRY.....                      | March 25, 1895 |
| RAWLE, FRANCIS WILLIAM.....                      | June 12, 1911  |
| READY, GEORGE HENRY.....                         | March 20, 1903 |
| REED, CHESTER ALBERT.....                        | Dec. 16, 1912  |
| RICHARDSON, JENNESS.....                         | June 24, 1893  |
| ROBINS, JULIA STOCKTON (Mrs. EDWARD ROBINS)..... | July 2, 1906   |
| SAND, ISABELLA LOW.....                          | April 20, 1906 |
| SELOUS, PERCY SHERBORN.....                      | April 7, 1900  |
| SHANNON, WILLIAM PURDY.....                      | Oct. 29, 1916  |
| SLATER, JAMES HOWE.....                          | Feb. 22, 1895  |
| SLEVIN, THOMAS EDWARDS.....                      | Dec. 23, 1902  |
| SMALL, EDGAR ALBERT.....                         | April 23, 1884 |

*Deceased Members.*

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|  |                |
|--|----------------|
| SMALL, HAROLD WESLEY.....                          | Mar. 12, 1912  |
| SMITH, CLARENCE ALBERT.....                        | May 6, 1896    |
| SMITH, RUTH COOK (Mrs. H. A. HAMMOND SMITH).....   | Jan. 2, 1912   |
| SNOW, FRANCIS HUNTINGTON.....                      | Sept. 20, 1908 |
| SOUTHWICK, JAMES MORTIMER.....                     | June 3, 1904   |
| SPAULDING, FREDERICK BENJAMIN.....                 | Oct. 22, 1913  |
| STANTON, JONATHAN YOUNG.....                       | Feb. 17, 1918  |
| STONE, WILLARD HARRISON.....                       | March 15, 1895 |
| STYER, KATHARINE REBECCA (Mrs. J. J. STYER).....   | Jan. 20, 1917  |
| SWEIGER, HELEN BRONSON (Mrs. JACOB L. SWEIGER).... | March 24, 1907 |
| TAYLOR, ALEXANDER O'DRISCOLL.....                  | April 10, 1910 |
| THOMPSON, MILLETT TAYLOR.....                      | Aug. 7, 1907   |
| THORNE, PLATT MARVIN.....                          | March 16, 1897 |
| THORNE, SAMUEL.....                                | July 4, 1915   |
| THURBER, EUGENE CARLETON.....                      | Sept. 6, 1896  |
| UPHAM, MARY CORNELIA (Mrs. WILLIAM HENRY UPHAM)... | Nov. 29, 1912  |
| VENNOR, HENRY GEORGE.....                          | June 8, 1884   |
| WATERS, EDWARD STANLEY.....                        | Dec. 27, 1902  |
| WALKER, R. L.....                                  | Nov. 16, 1916  |
| WELLES, CHARLES SALTER.....                        | Feb. 24, 1914  |
| WHITE, JAMES CLARKE.....                           | Jan. 5, 1916   |
| WILLARD, SAMUEL WELLS.....                         | May 24, 1887   |
| WILSON, SIDNEY STEWART.....                        | Nov. 22, 1911  |
| WINDLE, FRANCIS.....                               | Feb. 24, 1917  |
| WISTER, WILLIAM ROTCH.....                         | Aug. 21, 1911  |
| WOOD, JOHN CLAIRE.....                             | June 16, 1916  |
| WOOD, WILLIAM.....                                 | Aug. 9, 1885   |
| WOODRUFF, EDWARD SEYMOUR.....                      | Jan. 15, 1909  |
| WORTHEN, CHARLES KIMBALL.....                      | May 27, 1909   |
| WRIGHT, SAMUEL.....                                | Jan. 18, 1917  |
| YOUNG, CURTIS CLAY.....                            | July 30, 1902  |
| ZAPPEY, WALTER REAVES.....                         | Feb. 20, 1914  |

